CITY OF PROVIDENCE

Sustainable Stormwater and Sewer Assessment

FINAL REPORT / March 31, 2025

RAFTELIS

SNEP NETWORK

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Letter to the Community

Building climate resilience is a critical part of improving the quality-of-life for our neighbors.

Providence is already seeing the impacts of climate change. We are experiencing more extreme weather events from more intense storms to more high heat days that make our communities vulnerable. Since I took office, we have had 11 significant storm events that flooded streets and businesses, caused costly sewer back-ups and sinkholes, caused water pollution and endangered residents.

In Providence, more than 60% of our sewer pipes are over 100 years old and had been neglected for too long. The City has also faced environmental enforcement actions from the State since 2017 because polluted stormwater run-off makes our rivers and ponds unhealthy.

My administration has prioritized investments in the maintenance of our sewer stormwater systems and the hurricane barrier, building green infrastructure, dredging of our major waterways and activating City departments to respond to flooding events with the same urgency as we do with snow.

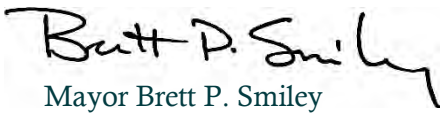
Developing a proactive strategy to build green infrastructure and maintain our stormwater and sewer infrastructure will protect our residents and businesses and be less costly than fixing catastrophic failures in the future.

With this report, our consulting partner Raftelis and a diverse stakeholder task force have laid the groundwork for Providence to develop sustainable and equitable funding and financing to ensure we can meet our operational and capital needs for our sewer and stormwater infrastructure and address water quality and flooding.

Thank you to our key partners who were essential to creating this thoughtful analysis, especially our Sustainable Stormwater and Sewer Assessment Study Task Force members, the Southeast New England Program Network, New England Environmental Finance Center, and the Narragansett Bay Research Reserve.

I look forward to working with the City Council, state leaders, our neighbors, businesses and property owners to continue building Providence's resilience to changing weather patterns and sea level rise and keeping our communities safe for generations to come.

Sincerely,



Mayor Brett P. Smiley

Introduction

Like many historic and well-established cities in the Northeast, the City of Providence (City) is facing challenges with aging and inadequate stormwater and sanitary sewer infrastructure.

Aging and inadequate infrastructure: Even small storms can cause nuisance flooding because drainage pipes are either too small or are in disrepair. Failures of sewer pipes can cause backup flooding into basements of homes, sinkholes that require emergency fixes, and significant impairments of local waterbodies. The results of these system failures can range from inconvenienced residents, restrictions on recreational and commercial water activities, unexpected costly repairs, to endangering lives.

Intensifying clean water regulatory and enforcement requirements: The City has been under a consent decree to improve the stormwater sewer system since 2017 and a U.S. EPA administrative order for the sanitary system since 2007. The City has made significant progress in analyzing the current system and moving to a more proactive approach to system maintenance. However, the challenges remain beyond the City's current capacity and budget to address and face an intensifying regulatory environment. On the regulatory front, the City must also comply with its Rhode Island Pollutant Discharge Elimination System (RIPDES) Municipal Separate Stormwater Sewer System (MS4) permit as well as Total Maximum Daily Load (TMDL) pollutant reduction requirements.

Intensifying impacts of climate change: The City's infrastructure challenges are exacerbated by the impacts of climate change which have already brought more frequent and more intense storms and stressed the capacity and integrity of the systems. In the last three years, Providence has experienced significant flooding in neighborhoods across the city 13 times. Residents and business have highlighted their concerns from flooded roadways to mold damage in homes and the loss of revenue small businesses faced when they had to close their doors to recover from major flash flooding events.

Developing sustainable funding and financing solutions: The City has engaged Raftelis, a national government and utility consulting firm with deep experience in New England, to develop an effective and sustainable approach to invest in a modern system to best serve all Providence neighborhoods now and in the future. The City currently has numerous projects underway to study flooding, watersheds, and community needs in response to flooding events. To support these projects and the overall improvement of the sewer and stormwater systems, it is necessary to have a comprehensive understanding of the current extent of these systems, the impacts that climate change will have on future flooding events, the programs that manage them, and funding available to enable this work.

As a result, the City engaged Raftelis to evaluate the feasibility of establishing an equitable, legally defensible, sufficient and sustainable funding source for its combined sewer, separate sewer, and stormwater management systems and regulatory required stormwater program. This Sustainable Stormwater and Sewer Assessment Report summarizes the technical analysis performed by Raftelis in 2024. The analysis compares the feasibility of continued tax funding to the establishment of stormwater and sewer utility user fees, which is the industry technical term that refers to dedicated funding for stormwater and sewer management

Engaging community in developing solutions: To keep the analysis grounded in responding to community concerns, the City also convened a stakeholder group representing a wide range of resident, business, non-profit and housing representatives to help inform recommendations to the City. The Stormwater and Sewer

Task Force engaged in reviewing the challenges and sustainable funding and financing options for the City and were supported by the results of Raftelis' technical analysis. During that engagement, the Task Force reviewed financing options to meet the City's operational and capital needs in several areas:

- to ensure the City's sewer collection and stormwater drainage systems are optimally functioning,
- that the City is in compliance with relevant RIPDES and MS4 permit requirements, and
- that capital improvement projects are implemented on a prioritized basis to repair or replace aging infrastructure, address water quality and flooding concerns, and build the City's resilience to changing weather patterns and sea level rise.

The technical analysis performed by Raftelis, as well as recommendations for future phases of this project, are presented in this report. This analysis is intended to inform the City's decisions about the best path to build and maintain infrastructure systems that address current challenges and make Providence and its residents more resilient to the impacts of climate change.

Designing for potential region-wide expansion: Because water and pollution are not confined by municipal boundaries, the City has previously partnered with neighboring municipalities to evaluate the feasibility of a regional stormwater utility. That study concluded that a multi-municipal regional approach would have resulted in significant cost efficiencies in staffing and equipment, the potential for developing more specific expertise, and more comprehensive watershed-based solutions to challenges but was not politically feasible at that time. While Providence is currently exploring developing stormwater and sewer utilities on its own, the interest remains in the potential for partnering with additional municipalities to develop a regional approach that would be able to develop more systemic solutions to the region's water quality and infrastructure challenges. The City instructed Raftelis to give consideration to recommendations that would allow the approach to expand and serve more municipalities over time.

1. Task 1: Sewer & Stormwater Systems Management & Current Costs

1.1. Existing Sewer & Stormwater Systems

1.1.1. System Characterization

Raftelis worked with City of Providence staff during summer and fall of 2024 to gain an understanding of the City's sewer and stormwater systems and programs and the challenges the City faces when it comes to their operations and long-term sustainability. Processes and funding at the City are dynamic, and information presented throughout this report reflects the project team's best understanding as of December 2024.

The City's sewer and stormwater systems are the legacy of a complex history of urban infrastructure development, with parts of it dating back to 1850s. Based on recent investigations by the City's Department of Public Works (DPW), the City manages approximately 451 miles of sewer main including sanitary sewer, municipal separate storm sewer (MS4), and combined sewer areas (Table 1). Approximately 48% of the system's total pipe length is combined sewer. Another way to characterize the City's system is by area, where approximately 68% of the City is served by the combined system and approximately 32% is served by separate sanitary and MS4 systems. The City's current understanding is that the sanitary and combined sewers are often interconnected, but ultimately both types of sewers discharge into the Narragansett Bay Commission (NBC) interceptor sewers, which convey sewage and some stormwater to NBC's treatment plants. When combined sewer capacity is exceeded during rain events, the overflows enter NBC's combined sewer overflow (CSO) tunnel in some areas and ultimately exit the system from the CSO discharge locations, which are owned by NBC. Additionally, recent investigations found that approximately 10% of the MS4 system eventually ties into the combined system outside of the original catchment areas, meaning the stormwater collected by these parts of the system is not discharged into water bodies as is typical for the rest of the MS4 system. Instead, it flows into the combined system and is carried to NBC's Fields Point plant for treatment or contributes to CSOs.

The system also contains a combined total of 19,202 manholes and 13,858 catch basins, all requiring inspection and maintenance as part of the City's road and sewer/stormwater infrastructure.

Table 1: 2024 Sewer and Stormwater System Metrics

	Combined	Separate Sanitary	Separate Storm (MS4)	Separated Storm that enters Combined system[1]	Total
Manholes	9,865	5,209	3,555	573	**19,202**
Catch Basins	6,852	3	6,308	695	**13,858**
Main (linear feet)	1,146,626	628,194	422,164	186,767	**2,383,751 (451.47 miles)**

[1] Not included in counts listed in "Storm" column.

DPW initiated system assessment through cleaning and closed-circuit television (CCTV) inspections of the most critical sewer system infrastructure starting in 2019. In this case, "most critical" infrastructure is defined as sewers serving areas of the City experiencing most sanitary sewer overflows (SSOs) and sewer backups. Since 2019, inspections of approximately 120,000 linear feet of pipes have been completed, primarily focused on the sanitary/combined systems and minimally on MS4 system as of 2024. DPW also finalized the sewer system mapping using GIS in 2020 and stormwater system mapping in 2023. This work was required by the 2007 EPA Administrative Order, which is further described below. Both of these initiatives have been driving repair and maintenance priorities for the sewer and stormwater systems in recent years. DPW continues to work on assessing the systems' overall condition, which still remain largely unknown as of the date of this report. However, DPW's current estimates are that at least 60% of the sewer collection pipes are at least 100 years old and a significant portion of the MS4 system is 75 years old or greater, with both systems suffering from deferred maintenance and long-overdue capital improvements owing to limited available funding over the last several decades.

1.1.2. Regulatory Obligations

The City's sewer and stormwater systems are subject to numerous state and federal regulatory obligations related to the federal Clean Water Act. The objectives of these regulations are to protect and restore the water quality of the nation's (state's) waters such that these waters are safe for all intended uses as designated by Rhode Island Department of Environmental Management (RIDEM) – such as swimming, fishing, aquatic habitat, shellfish harvesting, and drinking water . The City's (and other regulated entities') obligations take the form of individual and general permits issued by the RIDEM which prescribe specific activities that the City must undertake to prevent the discharge of untreated wastewater and to manage the City's stormwater system. Should any regulated entity fail to comply with the terms of its permit(s) or otherwise violate provisions of applicable regulations, either EPA or RIDEM may take action to bring the entity into compliance. The City is currently working under two such enforcement actions. The first is the EPA Administrative Order from 2007 (Docket No. 07-013), which aims to improve water quality in local and federal waters by preventing sanitary sewer overflows (SSOs). The mechanisms the Order uses include promoting wastewater infrastructure capacity assessments and proper short- and long-term maintenance of collection systems. Under this Order, the City is required to assess the adequacy of existing preventive and reactive maintenance programs through the framework of the Capacity, Management, Operations and Maintenance (CMOM) program that includes measures for self-assessments, annual reporting, and implementing corrective actions for any identified deficiencies in the combined and sanitary sewer systems.

The City is also working under a consent agreement with RIDEM for non-compliance with its stormwater permit as further described below. By way of background, there are two separate stormwater sewer systems (referred to as municipal separate storm sewers or MS4) in the City that are operated by the City of Providence and the Rhode Island Department of Transportation (RIDOT), respectively. Both entities are regulated by the RI Pollution Discharge Elimination System (RIPDES) Municipal Separate Storm Sewer System (MS4) Phase II General Permit that was issued by the Rhode Island Department of Environmental Management (RIDEM) in 2003. Permittees must have a comprehensive and functional Storm Water Management Program Plan (SWMPP) in place, which must include pollution prevention measures, treatment or removal techniques, monitoring, use of legal authority, and other appropriate measures to control the quality of stormwater discharged to storm drains and the surrounding waters. Currently, both RIDOT and the City are operating under consent agreements with the US EPA (RIDOT) and RIDEM (City) respectively to work on coming into compliance with all minimum measure requirements of the 2003 permit.

In addition to initial City MS4 permit requirements set in 2003, there were specific provisions identified in four Total Maximum Daily Load (TMDL) studies completed by RIDEM between 2007 and 2011 for surface

waters in the City, including Roger Williams Park ponds, Mashapaug Pond, West River, and Woonasquatucket River. These studies found stormwater to be a contributing factor to water quality impairments in these waters and recommended additional actions, including new additional infrastructure investments, for the City and RIDOT to meet the requirements of the TMDLs. These new requirements include enhanced non-structural stormwater system operations (among other strategies to inspect and clean catch basins, sweep streets on a routine basis, and eliminate illicit connections to the drainage systems) and construction of structural water quality treatment systems for the drainage systems of prioritized outfalls to reduce the discharge of stormwater borne pollution. The timelines prescribed in the 2017 RIDEM Consent Agreement to bring the City into compliance with its permit requirements are the main drivers for the City's efforts to build green infrastructure that will help reduce runoff and treat stormwater where it falls.

1.1.3. Climate Justice Priorities

A significant concern for the City is urban flooding, which has severely increased in recent years. This is likely driven by a combination of aging and undersized stormwater infrastructure, increasing amounts of impervious area within the watershed, and a combination of short and intense rain events with heavy rainfall rates as well as hyper-local storms that have affected isolated sections of the City. The City has experienced several intense rain events within the past few years that have led to significant flash flooding. Two notable instances were in July 2023, when the City had three days with greater than 2 inches of rain that caused widespread flooding, and on September 10 and 11, 2023, when consecutive heavy rain events caused severe flooding in a strip mall on Branch Avenue, leaving many people stranded in three feet of water and needing emergency responders to rescue them. Other examples include reports received by the City of streets, such as Brook Street, in essence turning into streams as a result of intense rainfall overwhelming the City's catch basins and drainage pipes which were not designed to handle such rain intensities. These flooding events, which threaten public safety and damage both the City's infrastructure and adjacent private properties, are repeatedly affecting the same areas of the City, some of which are underserved communities with lower household incomes.

It is also worth noting that the other effect of climate change Providence faces is an increasing number of high heat days. The impact of these days is felt more intensely in neighborhoods with significant impervious cover such as buildings and pavement, and those are also the environmental justice areas of the City. As such, addressing climate-driven flooding and increasing green infrastructure is viewed as not only a matter of public safety but also a climate justice priority, as discussed in the City's 2019 Climate Justice Plan.[2]

1.2. Municipal Staff for Sewer & Stormwater Systems

As of FY 2025, staff from six divisions within the Department of Public Works (DPW) and the Parks Department are involved in managing the City-owned sewer collection and stormwater management system, as shown in Figure 1 below. The Sewer Construction division contributes 100% of its time and resources to sewer and stormwater operations and project delivery. It houses 11 full-time employees (FTEs) and is led by the Superintendent of Sewer. The Engineering division is made up of 10 FTEs that spend approximately 60% of their time supporting sewer and stormwater programs. The Chief Engineer of Public Works leads the division and is supported by the Assistant Chief Engineer. The Public Works Administration division is estimated to contribute approximately 13% of its time and services to sewer and stormwater. The Highway Division has three street sweeper trucks and their operators, whose time is attributable to stormwater. Overall, a small portion (approximately 6%) of the Highway staff time is dedicated to street sweeping and patching roads following sewer construction, filling sinkholes, and repairing of other stormwater and sewer

[2] *The City of Providence Climate Justice Plan*, 2019. Accessed on 12/19/24. https://www.providenceri.gov/wp-content/uploads/2019/10/Climate-Justice-Plan-Report-FINAL-English-1.pdf

infrastructure-related issues within the City's rights-of-way. The Garage division contributes 35% of its current time and resources to sewer and stormwater, which includes time for repair and maintenance of the City's three existing street sweepers and Sewer Construction's field trucks and specialty vehicles, such as clam shell diggers. The Traffic Division is responsible for signage in work zones and posting "No parking" signs, contributing about $5,000 of supplies each year to sewer and stormwater operations.

Figure 1: Six divisions of Department of Public Works (dark blue) and Parks Department currently provide staff and resources to support the City's sewer and stormwater programs

Note that some projects require occasional support by the City Police Department for traffic regulation and public safety; however, that support is covered under capital projects and not within the operations and maintenance budget.

Based on recent data, the City's Parks Department supports Green Stormwater Infrastructure (GSI) operations and maintenance by contributing staff time and maintenance materials. Other City departments provide indirect support, which is not included here.

It is worth noting that, similar to other municipal organizations, staff retention and turnover has been a challenge for the City and has impacted operations of the sewer and stormwater programs.

1.2.1. Operations, Maintenance, and CIP

This section discussed the current planning, operation, maintenance, and capital improvement activities implemented under the existing sewer and stormwater management programs. Detailed costs are summarized in section 1.4 below.

In FY2025, the City has several ongoing capital improvement projects that are related to the sewer and stormwater systems, including:

1. Sanitary Sewer Evaluation Survey (SSES) that includes system-wide cleaning and inspection using CCTV and is initially focusing on high priority and medium-to-high-risk/consequence sewers. This is

one of several studies that aims to identify specific capital improvement projects for future implementation.
2. On-Call Sewer and Drainage Repairs are fully programmed for excavation, sewer repairs, and cured-in-place pipe (CIPP) installation. The City's current on-call contract for this work is planned to be completed by the end of this fiscal year.
3. The Illicit Discharge Detection and Elimination (IDDE) program guided by the RIPDES permit requirements has been completed as of December 2024. However, DPW is ready to pursue illicit discharges that are reported to the City or otherwise detected as a result of operations.
4. The Total Maximum Daily Load (TMDL) implementation plan that involves several projects that have been preliminarily sited and are planned for design and implementation starting in FY2026.
5. Unprogrammed CIP allocated to emergency or unexpected asset renewal projects as needed.

As discussed in section 1.2, DPW contributes time and resources from the Engineering, Sewer Construction, Public Works Admin, Garage, Highway, and Traffic divisions to carrying out activities in the sewer and stormwater programs. The Sewer Construction division is responsible for system cleaning, maintenance, and minor repairs, including emergency response during and after storm events. The Engineering division focuses on engineering studies, capital cleaning and CCTV projects, design and managing sewer and stormwater projects construction, while the Public Works Admin division provides administrative support to delivering these services. In addition to these divisions, there are also contributions from the Traffic, Garage, and Highway divisions on a smaller scale. Essential aspects including traffic signage, equipment maintenance and repairs, and right-of-way repairs following buried infrastructure projects are provided by these divisions. Notably, the Highway division provides street sweeping services both in-house and as a contracted service and handles the disposal costs related to these services. DPW's work on GSI projects is supported by the Parks Department that performs regular maintenance on the projects installed in Roger Williams Park.

1.3. Unmet Needs

The City must enhance sewer and stormwater systems operations to comply with the terms of the EPA Administrative Order regarding the sewer system as well as the RIPDES permit and RIDEM Consent Decree for the MS4 system. These requirements are primarily intended to help the City implement programs to improve water quality. Additionally, the City aims to address chronic flooding and climate justice concerns and bring aspects of the sewer and stormwater programs in line with industry best practices. Unfortunately, a lack of consistent and adequate funding has constrained the City from taking the proactive approach it desires to fully face these pressing challenges. Even though DPW has taken steps to better understand the condition of the sewer system, only a small part of the City's system has been investigated to date because of the limited funding, meaning the City has only a partial understanding of the condition and needs of the sewer and stormwater systems as a whole. Additionally, with 60% of the sanitary system estimated to be over 100 years old, much of the system is beyond the expected useful life and is anticipated to require renewal and replacement. Industry best practices specify an average rate of sewer length renewal of 1-2% annually, while DPW's rate of renewal in recent years has been highly variable and based on available funding. The current active effort enabled by a recent surge of capital project funding resulted in DPW achieving that target rate, and the City would like to continue that trend.

According to the Chief Engineer, DPW's capacity for executing capital projects is limited by the amount and timing of available funding. For example, funding was made available in FY 2025 via a Providence Public Buildings Authority (PPBA) bond for $11M. Relying on this funding, DPW leadership is in the process of developing a capital program for FY 2026 - FY 2028 to address some of the City's most pressing current

sewer system needs. This approach to capital funding was first implemented in 2018 when the City borrowed funds to support sewer and stormwater capital projects that are spent down on one- to three-year cycles.

Prior to the availability of the current capital improvement funding, all sewer repairs were reactive. The City understood that the reactive approach that focuses on emergency repairs is often more expensive than longer-term planned repairs, replacement, and capital investments, and it sought to reverse this trend. From the commencement of the most recent capital funding cycle (2017-2019), repairs continued in a reactive fashion until the backlog was adequately addressed. Currently, reactive repairs account for approximately 10-15% of all sewer repairs, while proactive repairs account for 85-90%. DPW would like to stay on this proactive path when it comes to maintenance and would like to expand this approach to include long-term capital planning.

One consequence of not having a long-term capital planning outlook in place is that DPW cannot justify additional staff positions to reach measurable goals, placing undue burden on existing staff as program needs expand. Overtaxing staff can contribute to reduced staff retention. Growing in-house capacity by adding staff positions has the added short- and long-term advantages of being likely less expensive than continuing to rely primarily on contractors to execute the needed projects. It also helps to build and preserve institutional knowledge.

As mentioned above, DPW leadership has been shifting toward proactive planning for some parts of its program, such as CCTV/cleaning of its linear assets and resulting repairs, starting in FY 2023 and would like to continue that trend. There is a need to conduct systematic flow monitoring to inform master planning of both the sewer and stormwater systems to guide capital improvement priorities and investments, which is not currently possible due to the limited available funding. This master planning would allow DPW to create a short-term and long-term outlook to identify specific prioritized projects in the 5-year and 10-year capital plans to address overall program goals and the City's multiple regulatory requirements. The cost projections described in section 2 of this report recommend a potential pathway to achieve system repair and renewal and master planning goals by budgeting for these efforts specifically, and to provide an estimate of total funding that may be needed to implement and support the prioritized projects resulting from these planning efforts.

1.4. Current Costs of the Sewer & Stormwater Programs

The current operation and maintenance (O&M) costs of the sewer and stormwater programs include the work of six divisions within DPW and are supported by the Parks Department. Contributions from these divisions within DPW and the Parks Department are summarized below in Table 2.

Table 2: Summary of FY 2025 O&M Sewer & Stormwater Systems Costs

Division	FY 2025 O&M Costs
Department of Public Works:	
Sewer Construction	$1,558,247
Engineering	$846,410
Public Works Administration	$155,824
Traffic	$5,000
Garage	$410,775
Highway	$810,314
Parks Department	$115,000
Total O&M	**$3,901,570**

The current sewer and stormwater capital projects were briefly described their costs are summarized in Table 3. The City has secured funding for all of these projects through FY 2025, with some projects projected to be completed in FY2025 while others are continuing into FY 2026.

Table 3: Details of CIP for FY 2025

	Project	Description	FY 2025
1	Sanitary Sewer Evaluation Survey (SSES)	Continuation of system-wide cleaning and inspection (approx. 20 miles), including CCTV investigation; started with high priority, high risk sewers. Costs include contractor and Police Dept support for traffic management. No approved annual funding beyond FY 2025.	$271,467
2	On-Call Sewer and Drainage Repairs (2023-2025)	New on-call contract for excavation, sewer repairs, and cured-in-place sewer pipe (CIPP) installation. Targeted for completion in FY 2025.	$4,734,459
3	Illicit Discharge Detection and Elimination (IDDE)	IDDE required per RIPDES MS4 permit has been completed in December 2024 with few IDDE opportunities identified. DPW will respond to future IDDE reports by the public, but no additional funds have been set aside for planned IDDE activities.	$24,314
4	TMDL Implementation Plan	Construction of planned projects by contractor; costs include support by Police Dept for traffic management. Likely will extend into FY 2026 at an additional $300,000.	$305,905
5	York Pond Watershed Project	$150,000 City match to received grant for riparian flooding mitigation. $50,000 will be applied in FY 2025 and remaining $100,000 will be applied in FY 2026.	$50,000
6	Unprogrammed CIP	Emergency or unexpected asset renewal projects as needed. Likely projects include additional sewer system CCTV and renewal and replacement; additional TMDL implementation and study projects.	$3,050,000
	Total CIP		**$8,436,145**

2. Task 2: Sewer & Stormwater 10-Year Cost Projections

Raftelis worked with DPW staff to estimate stormwater and sewer operations, maintenance, and capital costs for a 10-year planning period from FY 2026 – FY 2035. The goal for this projection was to provide a starting point for meeting operational and capital needs of the City's sewer and stormwater management systems over a 10-year period. These planning-level projections are rooted in the City's goals to bring both sewer and stormwater programs in line with industry standards, achieve regulatory compliance, reduce flooding and improve stormwater management, and align with stated climate justice goals within the City. When developing these costs, the Raftelis and City teams took into consideration four tenets:

1. The functionality of the City's sewer collection and stormwater management systems.
2. The City's compliance with the applicable regulatory requirements, such as the 2007 EPA Administrative Order, 2003 RIPDES permit requirements, and 2017 RIDEM Consent Decree.
3. The phased implementation of capital improvement projects on a prioritized basis to repair or replace aging infrastructure, address flooding and water quality concerns (including regulatory requirements), and build the City's resilience to changing weather patterns and sea level rise.
4. Because the sewer and stormwater system condition assessments and master planning conducted to-date has been limited, these estimated costs are subject to change and could substantially increase as more knowledge of the system and its condition and capacity limitations are evaluated and are quantified.

While these costs were developed in close collaboration with DPW staff, they still represent a planning-level vision of the program based on industry best practices. The City should revisit these estimates in a future phase of the project if there is desire to explore different levels of service that either the sewer or stormwater programs may offer.

2.1 Future Sewer & Stormwater Program Operations

2.1.1 Existing Costs

Operations and maintenance (O&M) projections are firmly based on the current FY 2025 actual budget and, where not expanded, are escalated over time using inflationary assumptions. Each line item was assigned a category and then escalated for inflation based on the escalation percentage assigned to them. The categories and their corresponding annual escalation percentage increases are as follows:

a. Salaries & Benefits – 3%
b. Longevity – 2.75% (based on City historical precedent)
c. Maintenance – 2.5%
d. Supplies – 2.5%
e. Contracted Services – 4% (assuming contracted services will appreciate at a higher rate than internal City costs)
f. Street Sweeping contracted costs – 5% (allowing for baseline 4% escalation as a contracted service and gradual expansion of services during the planning period)
g. Disposal Costs – 7% (based both on rising costs and expanding level of service over time)

2.1.2 Recommended Staffing Increases

DPW leadership would like to build capacity of the department to perform more work in-house to reduce contracted costs and build institutional knowledge. This additional staff capacity will also be needed as the annual capital program ramps up to execute the needed increased work and spending. New positions listed below were either identified as needed to fill current gaps by DPW leadership or recommended by Raftelis to provide support for City's vision of the sewer and stormwater programs over the 10-year timeframe:

1. Sewer Construction
    a. Stormwater and GSI Program Supervisor
    b. Three CCTV crews – 2 full-time employees (FTEs) each, 6 FTEs total
    c. Two sewer dig-up crews – 3 FTEs each, 6 FTEs total
    d. Additional vac truck crew – 2 FTEs
2. Engineering
    a. Three project managers to support program growth and capital project delivery over the 10-year time span
3. Garage
    a. Sewer truck mechanic for existing and recommended equipment
4. Highway
    a. Street sweeper operators – 3 FTEs to expand current sweeping operations

In the financial model, the start years for these positions have been timed to correspond with needs under the projected capital plan. For example, new Sewer Construction division crew positions are projected to start during years when the supporting equipment is budgeted in the capital costs (Years 5 and 9 of the study period).

Based on the administrative framework for the new funding source as described in Task 5, our team also recommended two FTEs to support the administration of the potential new utilities. Please see Task 5 for additional discussion.

A newly itemized internal cost is storm response, which is included under the Snow Removal division. Starting in FY 2026, the City is planning to create a new billing code within Snow Removal to account for storm-related overtime for the employees of the other divisions, like Sewer Construction and Highway. By creating this new billing code, the City will be able to better track overtime hours associated with non-snow emergency storm response activities related to rain and flooding, which directly impact stormwater and sewer operations. While these costs aren't new, they will be better tracked, budgeted, and accounted for using this new billing code.

2.1.3 Projected Increases in Contracted Services & Supplies

New or expanded costs that appear in the financial model include increases in contracted services and supplies for certain departments. Within the Sewer Construction division, several types of supplies and services to address needs were added to the funding plan.

1. As mentioned above, the City will begin tracking wet weather storm response-related costs starting in FY 2026. DPW staff decided to create a budget line for storm response supplies, which include sandbags for storm preparedness and supplies supporting post-storm cleanup efforts.
2. GSI best management practice (BMP) contracted maintenance includes funds for maintaining the existing BMPs in Roger Williams Park and maintenance of new BMPs that will be installed per the

TMDL BMP schedule that DPW is working on with its engineering consultants. While current GSI in Roger Williams Park is maintained by the Park Department, this maintenance is likely to be contracted out as GSI expands. The same approach is assumed for GSI BMPs that have been planned but not yet constructed. GSI project maintenance costs are assumed to begin the year following programmed project completion.

3. In addition to maintenance labor costs, Raftelis recommends a separate line item for materials for GSI BMP maintenance, which include plants, mulch, and soil.
4. As discussed in Task 5, the City is expecting to outsource the majority of the administrative tasks related to the new funding source. These costs would include staffing for utility bill creation, customer service, payment processing, the costs for printing and mailing bills, and billing software support.

The funding plan also includes additional supplies and services in the other divisions. In the Garage division, DPW leadership wanted to break out the service cost for repairs to automobiles and trucks that are attributable to storm response to better track and budget for this need. The Engineering, Public Works Administration, and Traffic divisions have no additions to supplies and services. Within the Highway division, Raftelis is recommending an expansion of existing contracted street sweeping services, in addition to expanding in-house street sweeping capacity as described above. This recommendation is driven by:

- The need to comply with the findings of the Total Maximum Daily Load (TMDL) studies recently completed by the City that called for enhanced stormwater system operations, including more frequent street sweeping.
- City staff observations about the large amounts of debris regularly recovered from catch basins under the current level of street sweeping, indicating a need for more frequent sweeping.

Associated with expanded in-house and contracted street sweeping, we anticipate the City will experience an increase in debris disposal ("tipping") costs. This increase is accommodated in the Highway division cost projections for contracted services. The combination of enhancing internal street sweeping capacity and expanding contracted street sweeping services is expected to result in measurable reductions of solids and floatables entering both the MS4 and combined sewer systems. City staff also noted that street sweeping will be a visible part of enhanced stormwater program operations that will be felt and seen by the public.

2.2 Capital Projects

As part of the 10-year plan and its cost projections, Raftelis developed a list of sewer and stormwater capital projects and associated planning-level cost estimates for the City. These projects are expected to maintain and improve the City's sewer and stormwater systems, and the pace of implementation will increase as the sewer and stormwater programs build revenue and capacity from the new proposed fees. Near-term costs are broadly focused on increasing the level of understanding of the conditions and capacities of the sewer and stormwater systems. This information would allow DPW staff to better plan for the necessary system asset renewal or replacement and new projects construction to address system capacity needs and the multiple regulatory requirements. This work includes system flow and rainfall monitoring, watershed/sewershed hydraulic model development and master planning, sewer and stormwater systems CCTV/cleaning and condition assessments, and increasing the annual renewal/replacement of the sewer and stormwater systems over time. Near term projects also include implementation of planned GSI projects to comply with the TMDL and MS4 permit requirements, as well as flood reduction projects.

Projected capital costs in later years include planning-level cost estimates and allowances for future projects resulting from the master planning and condition assessments described above. These future projects include

additional GSI and flood mitigation projects as well as vehicle and equipment purchases to support expanded program operations and renewal/replacement. As mentioned above, O&M budgets for both programs are shown to increase commensurately as staffing and contracted services expand to support the growing programs.

Table 4 below summarizes the estimated capital costs for the 10-year capital planning period. When discussing and presenting capital costs, the City team preferred to differentiate flood mitigation projects from the rest of Capital Improvement Plan (CIP) projects, which are largely driven by regulations, to better understand the segmentation of projected costs. This approach is reflected in the table, which shows flood mitigation projects for sewer and stormwater separately from other CIP (General CIP). After discussing with the City, Raftelis recommends a planning contingency amount of 7% annually as a set-aside for capital reserves to fund emergency projects, unforeseen cost increases, and other similar urgent needs. This recommendation is slightly lower than the typical recommendation of 10% contingency given the level of unknowns at this point in the planning process and represents a compromise between the desire to provide a safety net for unknown costs and the City's affordability concerns. It's important to note that, because limited sewer and stormwater system condition assessments and master planning have been conducted to-date, the estimated costs are subject to change and could substantially increase as more knowledge of the system and its condition and capacity limitations are evaluated and are quantified.

DPW began detailed planning for FY 2026 in the fall of 2024 after the recent Providence Public Buildings Authority (PPBA) bond funding of $8M became available, with the sum expected to be spent down in FY 2026 and in FY 2027. As of the date of this report, only some of the projects to be funded with the newly available $8M have been identified, and they are summarized in the table below; the balance remains to be programmed.

Table 4: Summary of Escalated Capital Costs ($)

CIP Summary	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
General CIP – Sewer	194,133	491,420	1,679,731	3,510,204	5,405,954	6,848,602	6,371,478	7,300,358	8,960,531	8,541,824
Flood Mitigation – Sewer	7,800	-	-	278,538	920,021	1,334,008	1,545,280	1,689,205	1,927,571	2,004,674
Contingency – Sewer	-	-	167,973	378,874	632,598	818,261	791,676	898,956	1,088,810	1,054,650
Total CIP – Sewer	**201,933**	**491,420**	**1,847,704**	**4,167,616**	**6,958,573**	**9,000,871**	**8,708,434**	**9,888,519**	**11,976,912**	**11,601,147**
General CIP - Storm	1,038,499	1,319,223	1,951,723	3,434,698	5,658,092	7,284,659	8,931,012	9,843,765	10,823,583	12,006,180
Flood Mitigation – Storm	70,200	216,320	224,973	2,740,811	6,151,049	9,412,166	9,762,334	10,481,284	11,156,731	11,603,001
Contingency – Storm	-	-	217,670	617,551	1,180,914	1,669,682	1,869,335	2,032,505	2,198,031	2,360,918
Total CIP – Storm	**1,108,699**	**1,535,543**	**2,394,366**	**6,793,061**	**12,990,056**	**18,366,507**	**20,562,681**	**22,357,553**	**24,178,346**	**25,970,098**
Total CIP – Overall	**1,310,633**	**2,026,963**	**4,126,377**	**10,661,750**	**19,404,575**	**26,620,995**	**28,472,812**	**31,366,634**	**35,169,205**	**36,546,575**

In order to more adequately fund the City's goals and regulatory requirements for both programs, capital costs for identified and anticipated projects are projected to increase over the next 10 years. Future sewer capital

program costs are expected to scale from approximately $491,420 in FY 2027 to $11,601,147 in FY 2035. Similarly, future stormwater capital program costs are expected to increase from $1,535,543 in FY 2027 to $25,970,098 in FY 2035. Flood mitigation projects, which are expected to be covered primarily by the stormwater program, drive the stormwater capital budget to be more than double that of sewer by FY 2035. Note that, while flood mitigation projects are expected to be funded primarily by stormwater fee revenues, the City decided to allocate a portion of some projects to be funded by revenues from the sewer fee. The reason for this is that flood mitigation projects will likely be located throughout the City and not just in areas served by the MS4 system. For example, if the City was to install a flood mitigation project in an area served by the combined sewer system, such as a retention pond, the resulting reduction in the volume of stormwater and pollutants entering the combined system would also help the City achieve regulatory compliance, which is primarily focused on water quality management.

Per the assumptions of the model, the projected capital costs begin to increase at a more rapid pace in FY 2029 when it is assumed that the City may start financing capital costs with revenue bonds, following the assumed implementation of the proposed sewer and stormwater fees in January 2027. The waiting period of a year and a half after the utilities' launch will help confirm the revenue expectations from the new fees are stable and adequate for supporting the bonds. Additional assumptions regarding capital financing, as well as the methodology for allocating costs between sewer and stormwater programs, are further discussed in Task 4 below. A complete table of anticipated capital improvement projects and their estimated escalated costs can be found in Appendix A.

2.4 Projections Through 2035

Projected O&M and capital costs for both sewer and stormwater programs are summarized in Figure 2 below. With the potential implementation of the two utilities on January 1, 2027, our program recommendations and capital cost projections focused on FY 2027 and beyond. Until then, it is assumed the City's General Fund will continue funding both programs from FY 2026 and midway through FY 2027. As a result, operations and capital proposed costs stay relatively low through these years, begin increasing in FY 2028 while relying on new fee revenues, and further increase in FY 2029 and beyond based on anticipated bond financing. There is steady growth in funding for both programs through FY 2035 to meet the needs and requirements discussed in the preceding sections. Total proposed operations and capital costs for both programs are estimated at $7,509,171 in FY 2027 when the sewer and stormwater utilities are projected for implementation and at $48,228,139 in FY 2035.

The costs for later years contain significant uncertainty, with cost allowances included for future projects. The actual future costs will be heavily influenced by the results of the planning studies recommended for the near term. Planning-level costs for specific projects that were used to build up the costs presented here will need to be confirmed through detailed project cost development rooted in the findings of the master planning studies and resulting priorities set by the City. The City may also consider different levels of service for both programs based on the results of the master planning studies that may influence longer-term costs.

Figure 2: Sewer and stormwater estimated program costs by category for 10-year planning period

3. Task 3: Equitable & Sustainable Funding Options

A major consideration in developing a funding model for sewer and stormwater programs is whether the methodology proportionately recognizes customers' demand upon these systems and recovers revenues accordingly. Stormwater and sewer programs are most often funded either via a municipality's General Fund (with primary revenues coming from an *ad valorem* property tax) or through utility user fees, which is the industry technical term that refers to dedicated funding for stormwater and sewer management. While *ad valorem* taxes scale with property values that do not have a direct relationship with the property's demand on the stormwater and sewer systems, a user fee-based funding method is designed to tie costs to their causal factors.

This section of the report provides a conceptual comparison between funding stormwater and sewer programs via dedicated user fees and property taxes. Each option was evaluated on the basis of the following five areas of consideration in the sections below:

1. Basis for revenue source and data availability to implement the approach.
2. Ease of implementation.
3. Flexibility of the funding method to address fairness and equity.
4. Ability of the funding method to address concerns of affordability and assistance needs.
5. Legal and political feasibility for implementing the approach, addressing questions such as:
    a. Does the City have the necessary enabling legislation, or would the City need to petition the Rhode Island General Assembly to pass the needed legislation?
    b. Will the necessary political bodies and the greater community support (or not aggressively oppose) the new funding mechanism?

Other funding options used by the City, such as grants, loans or other debt funding such as bonds, are generally not solely sufficient to fund the City's costs and therefore have not been evaluated as primary funding options. However, they can, in some cases, be used to supplement the primary funding source.

3.1. Basis for Revenue Source and Data Availability

Stormwater and sewer user fees are typically generated and collected through a utility, which is a distinct fiscal entity with defined service provisions and sometimes its own organizational structure used to support utility administration and program delivery. Utility user fees are based on property characteristics, with revenue from the fee going into a dedicated enterprise fund. A stormwater utility would collect revenue that would solely be used for stormwater related activities, and a sewer utility would do the same for sanitary sewer needs. The fee associated with the stormwater utility would be a parcel-based charge that uses one or more proxies for demand for stormwater service. With a stormwater user fee, properties would be charged for stormwater based on property characteristics related to stormwater as opposed to property value, which is the basis for the City's tax levy. With a sewer user fee, customers would be charged based on sewer use, as measured by water consumption, which will directly reflect the demand placed on the sewer system.

3.1.1. Stormwater User Fee

A stormwater rate structure may have several components that could serve as proxy for demand. Every component should be considered from the standpoint of fairness and proportionality to cost drivers to promote the rate structure's legal defensibility and appropriateness given the particular costs of the stormwater program. The following three elements are often used in stormwater rate structures, with the first being by far the most common:

1. **Impervious area (IA) charge** – Customer is charged based on impervious surface on the property. Impervious surfaces do not allow stormwater to infiltrate. Greater amounts of IA increase the total volume and peak rates of runoff and increased pollution, thus increasing demand upon the stormwater or combined storm-sewer system and stormwater program. The majority of stormwater utilities across the U.S. use IA as a basis for their fees.
2. **Gross area (GA) charge** – A customer's fee could also be based in part on the overall size of the parcel. By itself, GA doesn't directly correlate with all stormwater cost drivers like IA does, but it does correspond to some of them. It should be noted that a rate structure that considers both GA and IA tends to shift cost recovery to customers who own larger parcels.
3. **Fixed or minimum charge** – Every customer could be required to pay a fixed or minimum charge to cover the costs of stormwater utility administration, which are distributed evenly among all customers regardless of customer class or property characteristics. For example, it costs the same amount to generate a bill for a commercial customer as it does for a residential customer. However, while this fixed charge can fairly recover some costs, adding this type of charge tends to shift program costs to smaller customers.

The most common stormwater rate structure in the U.S. and Canada is an impervious area rate structure[3], with the units of charge being **equivalent residential units, or ERUs**. An ERU is a unit of measurement that is developed for each utility and is typically determined as the median size of impervious area on residential parcels within the utility's service area. Alternatively, the utility may use a preset unit of measurement as its standard unit, such as an increment of 1,000 SF of IA. The ERU is considered the best practice in the industry as it establishes parity between the residential and non-residential customer classes and accurately represents the proportionately related burden on the stormwater conveyance system while limiting the need for individual impervious area measurement of single family residential detached properties.

Raftelis has measured the impervious area on a statistically significant sample of residential parcels in the City and determined the ERU to be 2,700 square feet. (See detailed discussion in Task 4.) The impervious area on other property types has been estimated, not measured, during this phase of the project. The total units of service have also been estimated to inform the financial modeling exercise described in Task 4.

3.1.2. Sewer User Fees

The industry standard for sewer user fee rate structures is to calculate the fee for each property based on billable water consumption, meter size, or customer class. Water consumption is utilized for the purpose of developing volumetric fees, while meter size or customer class are utilized for purposes of developing fixed charges. Many sewer utilities in New England and the U.S. use a combination of volumetric and fixed charges in order to balance equity, revenue stability, and the cost of providing service to different customer types.

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[3] *Western Kentucky University Stormwater Utility Survey 2024.* Accessed on 2/10/2025. https://digitalcommons.wku.edu/seas_faculty_pubs/20/

1. **Volumetric User Fees** – Customers are assessed a bill based on the amount of the property's water consumption. Water consumption reflects the proportional demand each individual customer places on the sewer system, as most, however not all, water that enters a property also leaves that property and enters the sewer system. Volumetric user fees ensure that customers placing less demand on the sewer system pay less, and those placing more demand pay more, creating an equitable cost recovery mechanism.
2. **Fixed User Fees** – Customers are assessed a bill based on either their water meter size or customer class, though it should be noted that industry best practice is to assess a fixed fee based on meter size. Fixed fees reflect the fixed costs associated with operating a sewer system, as not all costs incurred are variable and contingent upon the actual volume of sewer and demand placed on the system. More often than not, fixed fees are scaled based on meter size, such that larger meters, requiring greater capacity of the system, pay more per billing cycle than smaller meter sizes. With the fixed fees, all customers contribute to the fixed costs of operating the sewer system, proportional to their respective capacity.

3.1.3. Additional Data Needs for User Fees

To proceed with an impervious area-based rate structure for a stormwater utility, the City will need to develop impervious area data for non-single family residential (NSFR) parcels. Additionally, the City may consider tiered residential rates that would differentiate between smaller and larger residences while not placing an extensive data maintenance burden on the utility administration staff. An informed proposal for a tiered residential rate structure would require additional data development and analysis.

To implement and continue to accurately bill sewer fees, the City will need to establish a data exchange with Providence Water to receive monthly water bill data, including any retroactive adjustments to water consumption that would then affect sewer bills. Additionally, the City and Providence Water will need to decide upon a customer service process, policies, and service level agreements to resolve questions and potential disputes that result from sewer bills sent by the City that are based on water usage data created by Providence Water. Though not yet quantified, there may be a cost associated with this arrangement with Providence Water.

Additional data needed to accurately calculate fees for all properties in the City would be the total costs of the stormwater program separated from the sewer program needs. As described in Tasks 1 and 2, DPW currently does not have a long-term outlook or firm associated costs for stormwater or sewer programs. Raftelis worked with the City to develop planning-level costs for these programs for the next 10 years to understand the scale of funding increases that would be needed to achieve the City's goals. These costs were estimated based on general understanding of the City's overall goals, and program expansion and potential projects were recommended to help the City with achieving these goals and align the stormwater and sewer programs with industry best practices. These recommendations are outlined in Task 2. Additionally, since the stormwater and sewer enterprise funds are each assumed to solely fund their respective programs, Raftelis worked with the City to separate stormwater and sewer program costs using an accepted cost of service allocation methodology, as described in Task 4.

The resulting program cost estimates were sufficient for the goals of this utility feasibility study. If the City decides to pursue implementation, it is recommended that the level of service for each program, project timing and costs, operational and staffing assumptions, and cost-of-service allocation methodology are further refined prior to or during the implementation of either user fee. Similar to different stages of engineering

project costs estimates, this next step is recommended for more detailed goal setting for each program and more in-depth staffing, operational, and project planning to refine feasibility-level costs into more precise estimates that would drive annual utility revenue requirements and result in accurate rate calculations.

3.1.4. General Fund

Tax revenues have historically supported sewer and stormwater program needs in the City of Providence. Currently, property owners who are not tax exempt contribute to sewer and stormwater management costs based on their properties' assessed value.

Tax rates are applied to property taxes based upon property type. They are applied by taking a property's assessed value and multiplying it by the tax rate. In FY 2025, the City's residential tax rate is $18.35 per $1,000 of assessed value for non-owner-occupied properties and $10.46 per $1,000 of assessed value for owner-occupied properties. The City's commercial tax rate was $35.10 per $1,000 of assessed value.[4] As shown in Figure 3**Error! Reference source not found.**, the assessed value would be multiplied by the tax rate to calculate a property's tax. This calculation does not include exemptions, such as homestead or low income.

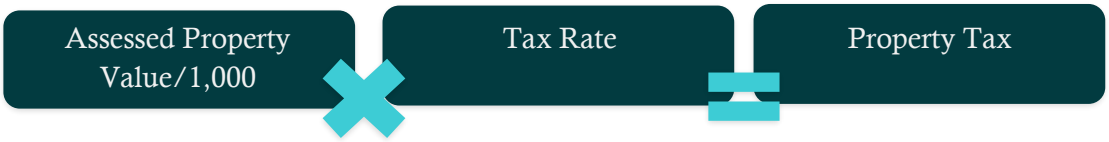

Figure 3. Applying Tax Rate to Properties' Assessed Value

As with the user fee option, the City would need to understand the total projected revenue needs for the stormwater and sewer programs to calculate the tax increase required to continue funding these programs with tax revenues. No cost allocation between sewer and stormwater costs is required to continue with the current funding approach. However, since tax revenues fund a variety of City departments, this funding option may not provide a stable and secure funding source for increasing sewer and stormwater needs as other high priorities arise for the City.

3.2. Ease of Implementation

3.2.1. Stormwater and Sewer User Fees

As part of evaluating the feasibility of adding new sewer and stormwater user fees, the City of Providence is considering the tasks associated with implementation of both new utility as well as their ongoing administration. These tasks include pre-implementation tasks such as public engagement, implementation tasks such as billing setup, and ongoing administration tasks such as data maintenance and customer service.

In advance of any changes to the funding mechanism for stormwater, the City anticipates extensive community engagement to communicate stormwater and sewer infrastructure needs to its residents and property owners and solicit input and feedback about the user fee funding approach. It is essential for the public to understand the benefits of stormwater and sewer fees and the basis for them. Community engagement and education will also be critical for the sewer utility to help the public distinguish between the City's and NBC's infrastructure and the need for distinct fees to support each. Additionally, the City will

[4] *City of Providence Rhode Island Fiscal Year 2025 Municipal Ordinances*, 2024. Accessed on 01/03/2025. https://www.providenceri.gov/wp-content/uploads/2024/04/FY25P-Ordinance-Book.pdf.

likely want to engage with large landowners that are currently tax exempt, such as religious, academic, and medical institutions, to promote their understanding of and support for the new user fees.

A significant effort will need to be applied when setting up the administration of the new utilities, including making billing and customer service policy decisions, potentially hiring new staff to administer the program, and creating needed tools to help with accurate billing. Assuming either utility moves forward, several administrative decisions and processes must be undertaken, including but not limited to the following:

1. Establishing a billing format and methodology. Choices include:
    a. independent billing administered by the City; or
    b. a new bill sent with property tax bills; or
    c. as an addition to existing water utility bill, as conveyed by Providence Water; or
    d. as an addition to existing sewer treatment bill, as conveyed by NBC.

2. Ongoing utility administration needs could include the addition of staff necessary for the following tasks. The City may also choose to outsource some or all of these administrative functions.
    a. billing;
    b. customer support and inquiries;
    c. resolution of disputes and handling of appeals;
    d. intake of monthly water billing data from Providence Water to support the sewer fee, including intake and processing of consumption adjustments that would affect sewer charges;
    e. increased GIS analysis and administration to support the stormwater fee; and
    f. approving, tracking, and administering stormwater credits.

The City should consider that if these fees are conveyed on an existing utility bill or independent bill, shifting impacts from property owners under current tax funding to ratepayers for a new utility, including property tax-exempt institutions, needs to be accounted for and communicated. The results of Raftelis' work with the City on the potential administrative structure of these utilities during this feasibility study is captured in Task 5 discussion below.

3.2.2. Role of Stormwater Credits

One advantage of implementing a stormwater user fee is that it would allow the City to use credits and incentives to allow customers to reduce their bills while contributing to achieving stormwater program goals. Stormwater credit programs are designed by stormwater utilities to recognize and sometimes encourage and stimulate investments in private stormwater management, as well as to drive desired behavior by property owners paying the stormwater fee. Credits are granted to customers for reducing demand upon the stormwater drainage system and reducing the cost for stormwater management for the municipality. Some credit programs also feature one-time credits that are intended to incentivize a specific one-time action, such as purchasing a rain barrel or installing a rain garden. The City should consider the types of credits and amount of discount it wants to offer as part of the implementation process.

Though the effect of each individual stormwater BMP may be small, in aggregate the practices reduce the cost of managing and treating stormwater over time. The credit allows the utility to recognize the reduced burden and offer a reduced fee to customers who employ these stormwater management practices. Because of all these factors, credits allow customers to control their stormwater user fees. In this way, credits support the legal defensibility of the fee. A well-designed stormwater credit program also helps to build support for the new stormwater utility.

Credits' impact on revenues tends to be low to moderate (typically less than 1 and up to 5% of fee revenues). Consideration, however, should be given to the administrative burden imposed by a credit program, depending on its complexity. The City could develop a credit framework that balances the goals of recognizing and promoting private stormwater management with administrative simplicity. The credits should be tied to the City's stormwater program goals and regulatory requirements. The City would need to develop program eligibility criteria and standard operating procedures for processing applications, calculating credits and adjusting fees in the billing system, administering a renewal process, and enforcing compliance. Additional staffing requirements would include utility billing and customer service staff involved in data maintenance and account updates, and engineering/plan review and inspection staff who may have a more technical role in reviewing presented information, determining credit eligibility, and performing inspections to ensure compliance.

3.2.3. General Fund

To continue funding the stormwater and sewer programs via tax revenue from the General Fund, the City would continue to collect revenue as it does today, on its current tax bills, and no implementation plans would be required under this methodology. However, as discussed in other sections of this report, a tax increase will be required to fully fund the growing needs of both programs. It could be politically challenging for the City to continue to increase taxes as the programs' costs expand to meet those needs. Additionally, it could be politically challenging for the City to commit to funding the sewer and stormwater programs as other pressing needs arise.

Implementing a tax increase is less administratively intensive than creating a new user fee. The City already has a tax collection system in place. Additionally, the City residents are already familiar with taxes while they may not be familiar with the concept of a stormwater or sewer user fee. Moreover, the current tax payments are tax-deductible while a user fee would not be. If a tax increase is implemented, it would initially require additional public engagement with the City residents, but administrative needs for ongoing support would likely remain at the current level.

In sum, while the administrative burden of this option is low, the political and practical feasibility of funding the sewer and stormwater programs at the desired level using the tax approach may also be low, as discussed further below and in Task 4.

3.3. Fairness of the Approach

3.3.1. Stormwater User Fees

The City's stormwater user fees would be charged based on the demand that each property places on the City's drainage systems, similarly to how Providence Water charges customers for the burden they place on its water distribution system as measured by metered water consumption. For stormwater fees, property IA serves as the measure of demand on the City's stormwater system since it is highly correlated with the peak rate and total volume of runoff. Stormwater runoff from impervious areas places demand on existing infrastructure, creates a need for system upgrades, and degrades water quality. These demands reflect most of the cost drivers for the stormwater program and justify IA as the basis for the fee. A stormwater user fee allows customers to reduce their costs by participating in stormwater credits programs to implement strategies to reduce polluted stormwater run-off, as discussed above. A credit is a common price break type that is widely accepted and is intuitive for customers to understand. This is in contrast to tax funding where individual customers can do little to affect their property valuation or the tax rate. Additionally, stormwater user fees are charged on all properties with IA regardless of their tax status, making sure that all stormwater

system users pay their fair share for stormwater management services provided by the City. Thus, a stormwater fee based on IA is generally considered more fair than tax-based funding for stormwater services and is legally defensible as customers' cost burden is proportional to cost drivers.

When implementing a stormwater user fee, the residential rate structure can be flat for all residential properties or tiered in segments of property IA. A flat rate applies the same fee to each residential property while a tiered rate has a series of fees that are proportionate to the amount of IA on each residential parcel. Either of these options is equitable for customers, but the options have different costs to administer. The IA characteristics in a community may cause the utility to lean more towards tiered rates, however. For example, if there's a relatively tight range of imperviousness for residential properties in the City, then a flat rate may be preferred. If the range of IA on residential properties is wider, tiering the residential fee may be a more attractive option as it allows for smaller impervious area residences to pay a lower fee than larger impervious area ones. For this study, Raftelis analyzed a statistically significant sample of residential properties to visualize the distribution of IA and determine the ERU. For a detailed discussion of results and recommendations, please see Task 4 section of the report.

3.3.2. Sewer User Fee

Similarly to stormwater fees, the City's sewer user fees would be charged based on the demand that each property places on the City's sewer systems, similarly to how NBC charges customers for the burden they place on their sewer treatment and combined sewer overflow detention facilities. Sewer fees more appropriately align cost causation with cost recovery as compared to taxation. As described earlier in this report, sewer fees are typically assessed on a volumetric fee basis, relying upon customer water consumption as it is most representative of the proportional demand placed on the sewer system with most water entering a property leaving in the form of sewer. In addition to a volumetric fee, it is incredibly common – and is in alignment with industry best practice – to also assess a fixed fee to reflect the fixed costs associated with operating a sewer system. More often than not, the fixed fees are scaled based on meter size, such that larger meters, requiring additional capacity of the system, pay more per billing cycle than smaller meter sizes. With the fixed fees, all customers contribute to the fixed costs of operating the sewer system, proportional to their respective capacity. The volumetric fees ensure that customers placing less demand on the sewer system pay less, and those placing more demand pay more. This significantly improves cost recovery equity amongst customers compared to taxation, where property value has little to no relationship with sewer system demands.

3.3.3. General Fund

The property tax levy does not necessarily corelate to stormwater demand because the assessed value of a tax parcel often does not scale proportionally to its demand for stormwater services. While there are cases where small impervious area and small property value are correlated, there are also cases where there is no clear relationship between property value, which is the basis of a tax, and demand placed on the stormwater system. For example, warehouses, retail stores, and parking lots may have large expanses of hard surfaces that prevent or impede infiltration but have low tax valuation. An example of this situation is shown in Figure 4 below. The impervious surface on these properties places a significant demand on the City's drainage system since all or most of the rain that falls on these properties enters the drainage system, causing infrastructure wear and tear, transports pollutants, and increases the potential for flooding and infrastructure damage. Conversely, dense properties, such as high-rise apartments and office buildings, which make up a large portion of the City's downtown area, have less impervious areas footprint, but have comparatively high property tax valuations. An example of this situation is shown in Figure 5 below.

Figure 4. Example of larger impervious area footprint and lower tax valuation properties (Corliss Street, Providence)

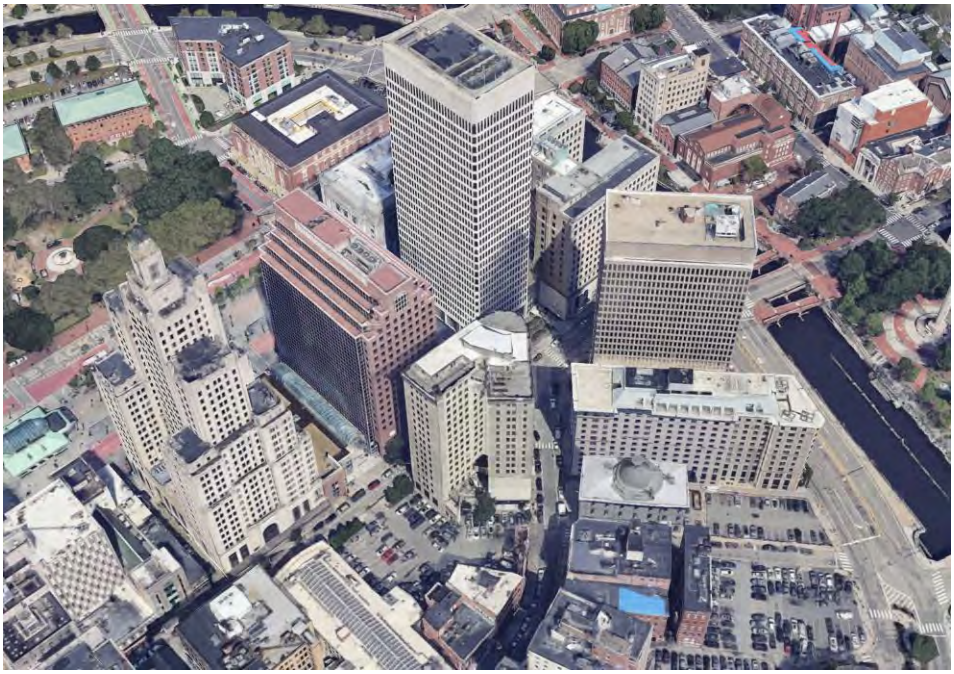

Figure 5. Example of smaller impervious area footprint and higher tax valuation properties (Downtown Providence)

Tax funding does not provide a mechanism for payers to reduce their costs by undertaking various GSI practices to reduce impervious area or runoff from their properties. Because the tax levy is not correlated to the demand for service, it doesn't provide an equitable mechanism similar to stormwater fee credits to incentivize and drive behavioral changes that integrate the public into the solution.

In addition, under a tax funding approach, tax exempt properties do not pay toward the costs of the stormwater or sewer programs. As of 2022, approximately 2,500 or 5%[5] of the City's parcels (by parcel count, not total area or value) are tax-exempt, e.g., hospitals, churches, government, and public schools and universities, excluding rights-of-way. These properties are contributing stormwater runoff to the drainage system but not contributing to the tax revenues that pay for needed maintenance and improvements of the drainage system now and in the future. Similarly, these properties are using the City's sewer collection network in proportion to their billed water usage but are not contributing their fair share toward its maintenance or improvements. This increases the financial burden on other properties and makes tax funding a less fair way to cover the costs of these programs.

Municipalities in Rhode Island are subject to a property tax levy cap, which limits the amount the City could increase the total annual property tax levy to provide additional stormwater funding.[6] According to the Report on the Property Tax Cap[7] for FY 2025, the City's FY 2025 tax levy increase was 4%. **It is projected that, due to the City's many financial commitments and fixed costs including pension, medical, and schools, the City may find itself needing to increase the total tax levy at the 4% level annually for the foreseeable future even prior to considering the proposed increases in sewer and stormwater program costs outlined in this report.** As discussed below in Task 4, the projected 10-year revenue needs for the stormwater and sewer programs would require the City to commit an increasing portion of its total tax levy to the needs of these two programs. If the City were to adhere to this commitment to the sewer and stormwater programs, funding stormwater and sewer programs through property taxes may not be a viable option because of other contractual or mandated commitments made by the City over the next 10 years.

3.4. Considerations for the **City's** Economically Disadvantaged Residents

3.4.1. Stormwater and Sewer User Fees

One of the City's criteria for selecting a funding method for stormwater and sewer programs going forward is the method's ability to give equity consideration for the City's economically disadvantaged residents. As mentioned previously in this report, the City has found that recent flooding events have acutely impacted lower income areas that have the least resilience to catastrophic events. Similarly, while localized flooding and sewer backups are always disruptive, their effects can be destructive and destabilizing to housing security of lower income people. The issue of adequately and sustainably funding the City's stormwater and sewer programs takes on a dimension of both climate and economic justice when considered from this perspective. One way that the City can give due consideration to its economically disadvantaged residents is to select the funding method that would fully and reliably fund these programs and allow the City to move toward its climate justice goals. However, as discussed above, the annual tax cap in combination with the growing needs of both programs would make it difficult for the City to commit to fully fund these programs via the General Fund.

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[5] *The Providence Journal, United States,* 2022. Accessed on 01/03/2025. https://databases.providencejournal.com/providences-tax-exempt-properties-in-2022-a-searchable-database/.

[6] Rhode Island General Laws § 44-5-2(b), accessed 12/23/24.https://webserver.rilegislature.gov/Statutes/TITLE44/44-5/44-5-2.htm

[7] Rhode Island Department of Revenue, Division of Municipal Finance, *Report on the Property Tax Cap for Fiscal Year 2025*, Accessed 01/06/2025. https://municipalfinance.ri.gov/sites/g/files/xkgbur546/files/2024-11/Report%20on%20the%20Property%20Tax%20Cap%202025%20Final.pdf.

Another way that the City could support its economically disadvantaged residents is by considering the implementation of a Customer Assistance Program (CAP). The City's legal counsel does not believe that the State of Rhode Island prohibits the funding of CAPs through utility rates, though it should be noted that no existing water or sewer utilities in the state currently offer CAPs to its customers. On the other hand, Rhode Island Energy offers electric and gas bill discounts to customers who qualify for specified government assistance programs, such as Medicaid, SNAP, and LIHEAP.[8] Outside of Rhode Island, the Boston Water and Sewer Commission (BWSC) provides a 30% bill discount to seniors and disabled persons.[9] Both of these programs could serve as models for the City's potential CAP, which City's counsel believes can be funded either through rate revenues or by the City's General Fund. Raftelis discussed this option with the City during the study and incorporated assumptions about the CAP into the financial model that is described in Task 4 and the utility administrative framework in Task 5.

A third equity consideration is that, under the fee funding approach, all properties with IA or water usage would contribute to funding of the stormwater and sewer programs, including currently tax-exempt properties. This expansion of the rate base and requisite units of service results in lower rates for all customers and eases the relative burden on the economically disadvantaged. Additionally, affordability concerns can influence decisions made during the final design of the stormwater and sewer rate structures. At that point, likely impacts on representative lower income households can be verified through additional customer impact analysis before the rate structure selection is finalized.

3.4.2. Property Taxes

With the current tax funding approach, the City provides for several tax exemptions to qualified economically disadvantaged taxpayers, including those who are elderly, on Social Security Disability assistance, have a service disability, blindness, or are veterans or indigent persons.[10] The total property tax exemption received is variable by exemption type. These tax exemptions would provide relief to some classes of economically disadvantaged customers but may not be able to cover as wide a spectrum as a CAP that is paired with the fee option, as described above.

3.5. Legal Considerations for Adopting the Approach

3.5.1. Stormwater and Sewer User Fees

The City currently has the legal authority to implement both sewer and stormwater fees. In 1947, the state of Rhode Island enacted legislation that allowed cities and towns to implement charges for the use of sewers and sewer systems.[11] This legislation also clarifies that any charges for sewer usage must be a reasonable amount in reference to the cost the municipality is incurring to maintain the systems. In 2002, the state of Rhode Island enacted legislation that made it possible for cities and towns to adopt ordinances that create stormwater management and utility districts.[12]

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[8] Rhode Island Energy Discount Rates, accessed 12/23/24. https://www.rienergy.com/site/ways-to-save/assistance-programs/discount-rates

[9] Boston Water and Sewer Commission Residential Billing Info & Assistance, accessed 12/23/24. https://www.bwsc.org/residential-customers/billing-info-and-assistance

[10] City of Providence Tax Assessors Exemptions. Accessed 2/10/25. https://www.providenceri.gov/tax-assessor/exemptions/

[11] Rhode Island General Laws § 45-61-4, accessed 01/06/2025. https://law.justia.com/codes/rhode-island/title-45/chapter-45-61/section-45-61-4/

[12] Rhode Island Stormwater Management and Utility District Act of 2002, 45 R.I. Gen. Laws § 1-2 (2002). Public Law 329 (rilegislature.gov).

The City will need to consider its authority to enforce collections of the new fees, however. While Title 45, Ch. 14 provides towns and cities with the authority to lien properties for non-payment of sewer fees, Ch. 61 does not provide the same authority for non-payment of stormwater fees.[13,14] The City may consider advocating for the Rhode Island General Assembly to amend the stormwater enabling legislation to allow for this or similar enforcement mechanism for stormwater fees. Otherwise, it can be expected that stormwater fee revenue collections would be lower than they would be with a collections mechanism in place, especially for "stormwater only" properties that receive no other bills from the City (e.g., properties with no water usage that would not receive a sewer fee, such as parking lots).

An additional consideration for stormwater fees is the specific exemption for state properties in the stormwater fee enabling legislation.[15] Because Providence is the state capital, it houses many state-owned properties. Exempting state-owned properties from the fee reduces the total units of service in the City and thereby increases the rate for all ratepayers, including single-family homeowners and the economically disadvantaged. The City may consider the legal and political feasibility of eliminating this exemption from an equity perspective. The relevant precedent has been set in that State properties do currently pay drinking water and sewer fees to their respective utilities.

3.5.2. Property Taxes

There are no legal implications for continuing to use taxes and the General Fund to fund the City's stormwater and sewer programs. However, as mentioned previously, municipalities in Rhode Island have a property tax cap of 4% that limits the annual increase to the total tax levy. To fully fund these programs at the needed level using the General Fund, the City would need to allocate a greater and greater percentage of the total tax levy to stormwater and sewer program funding, which may not be realistic given all its competing needs. See Task 4 for additional discussion.

If the City decides to go forward with stormwater and sewer user fees, it will create a stable source of funding for both programs that will be dedicated only to system maintenance, repair and remediation efforts, regulatory compliance, flood mitigation, and other stormwater and sewer program activities. With the user fee funding source in place, these programs will not have to directly compete with all other pressing City priorities covered by the General Fund as they do currently. Moreover, having a dedicated enterprise fund for each program would allow the City to explore financing strategies such as revenue bonds and double-barrel bonds that are not available with tax-based funding. This access to additional financing could help accelerate the stormwater and sewer program delivery, including more rapid completion of needed capital projects, compared to the current tax-based funding structure.

3.6. Other Funding Considerations

The implementation of new stormwater and sewer user fees doesn't preclude the City from continuing to fund a portion of the costs for both programs with the general fund tax levy. Alexandria, VA is an example of a stormwater program that is funded through both methods. Such an approach could help keep rates lower in the near term, and it inherently addresses some considerations for economically disadvantaged customers.

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[13] Rhode Island General Laws § 45-14-1, accessed 12/23/24. http://webserver.rilin.state.ri.us/Statutes/title45/45-14/45-14-1.htm

[14] Rhode Island General Laws § 45-61-4, accessed 12/23/24. http://webserver.rilin.state.ri.us/Statutes/title45/45-61/45-61-4.htm

[15] *Ibid.*

4. Task 4: Funding Plan for Selected Options

As described earlier in this report, the City has historically funded its sewer and stormwater system programs using allocations from the General Fund, while most of the capital program in recent years has been funded through PPBA bonds and occasionally supplemented by federal and state grants. The current approach has not provided sufficient resources to meet all the City's needs and regulatory requirements and fulfil the vision for its sewer and stormwater programs. After completing the assessment of current and estimated future costs in Tasks 1 and 2, our team compared the possibility of meeting these needs using the current funding mechanism (property taxes) and a user-fee based funding method.

Raftelis developed an open-source Excel-based financial model to perform cost functionalization, classification, and allocation to analyze a fee-based funding approach that the City could consider as an alternative source of funding. Our team also developed revenue requirements for both the sewer and stormwater fees by allocating existing and future O&M and capital costs, detailed in Task 2, to either the sewer or stormwater programs. Additionally, our team modelled assumed bond issuances to support the capital program and created a draft debt schedule, which was able to temper the annual revenue requirements associated with the envisioned capital projects. Raftelis then used developed rate structures based on industry standard designs for the sewer and stormwater programs to calculate potential rates over a 10-year planning period. Finally, our team conducted a customer impact analysis using the financial model to determine the potential cost burden new fees would have on a range of customer types. The following sections in this chapter refer to different areas of the financial model and expand upon the model overview to give a more detailed look at each step in the development of the fee-based funding approach.

4.1. Cost Allocations

The existing sewer and stormwater programs are intertwined both from the infrastructure and operational perspective. As mentioned earlier in this report, approximately 68% of the City's area is served by a combined sewer system that carries both sanitary sewage and stormwater. While DPW's operations are often oriented toward jointly supporting both the sewer and stormwater programs, this approach is likely to change in the future as the City moves towards compliance with regulatory requirements specific to sewer and stormwater management. The increased focus on flooding concerns, which are stormwater driven, is also encouraging the City to start thinking about its sewer and stormwater programs separately. These factors are driving the City to consider two separate fees to support its sewer and stormwater programs, which necessitates allocating the combined sewer and stormwater costs between the two programs.

Raftelis facilitated several discussions with the City to identify portions of operational and capital costs that are allocable to sewer and stormwater programs. As a first step toward determining revenue requirements for each fee, our team applied three allocation methodologies described below to divide these costs between sewer and stormwater programs. The percentages attributable to sewer and stormwater were input into the "Allocations" tab of the rate model and applied based on the selected allocation to sewer scenario (High, Medium, or Low) to the system costs in the "O&M" and "CIP & Financing" tabs. The results were calculated total costs attributable to either sewer or stormwater programs, which were then used in the revenue requirement calculations for the respective fees. For example, the Capital Cove pump line item in the CIP tab allocates 85% of its FY 2033 projected cost of $68,428 to sewer and the other 15% to stormwater, which

means that the project will contribute $58,164 to the sewer fee revenue requirement and $10,264 to the stormwater fee revenue requirements.

After considering all three allocation approaches, DPW believed that the high allocation to sewer approach currently best reflected the operational reality at the City.

4.1.1. High Allocation to Sewer

The City's sewer system comprises both combined sewers that are designed to handle direct stormwater contributions and separate sanitary sewers that are designed to handle some stormwater contributions to a lesser extent. The City's combined and separate sanitary systems both drain into NBC's combined system to reach the treatment plant and therefore do not differ functionally. Similarly, the City DPW team does not differentiate between the combined and separate systems when it comes to O&M or project planning and has a very similar approach to both systems in terms of staff time and department resources. Both systems see a similar degree of maintenance needs due to the impacts from fats, oils, and greases (FOGs), debris, and grit, and so DPW prioritizes these systems in a similar way when it comes to cleaning and inspections. When it comes to repairs, the sanitary and combined systems also appear to have similar structural issues, such as sags and structural failures. Based on these observations, the combined and separate sanitary sewer systems are treated as one system in this scenario.

The combined and sanitary sewer system length is 1,774,820 linear feet (LF) and separate stormwater sewer system (MS4) length is 608,931 LF, as provided by DPW GIS staff. The ratio between these systems is approximately 75% sewer to 25% stormwater. However, based on feedback regarding DPW's approach to system O&M and capital planning, Raftelis adjusted the allocation for some joint sewer/stormwater projects under this scenario to 85% for sewer and 15% for stormwater.

4.1.2. Medium Allocation to Sewer

Because dry and wet weather flows were not available to support this analysis, our team developed a cost allocation methodology to evenly allocate costs between sewer and stormwater for the combined sewer system. This approach assumes that the combined system is built twice as large as it would be if it were carrying sanitary sewer flows alone. The combined sewer system length is 1,146,626 LF. When 50% of it is allocated to sewer and added to 628,194 LF of sanitary sewer length, that results in 1,201,507 LF or approximately 50% of total combined, sanitary, and MS4 system length. Conversely, when 50% of combined system length is added to 608,931 of MS4 system length, that results in 1,182,244 LF or approximately 50% of total combined, sanitary, and MS4 system length. As a result of the ratio between the two systems being split 50/50, under the medium allocation 50% of joint sewer and stormwater costs are allocated to sewer and the other 50% to stormwater.

4.1.3. Low Allocation to Sewer

In the absence of system flow information specific to the City of Providence, Raftelis used data on total flows treated by the NBC and total water usage by NBC customers, both of which were publicly available data used on a previous rate case. These data were used to develop a third cost allocation scenario. Under this scenario, it is assumed that about 85% of total water usage by Providence Water customer is returned to NBC's wastewater treatment plants, and we used this calculated volume as a proxy for dry weather flows. Actual total treated flows at the plants would include both dry weather and wet weather flows, and the difference between them would be attributable to wet weather/stormwater. When the volume attributable to stormwater is divided by the total treated volume, the resulting ratio is 60% of total flows attributable to stormwater. This ratio is for the entire NBC system and not necessarily for the City's contribution, but, assuming that the ratio

of dry to wet weather flows are approximately the same from different NBC member municipalities, this calculation is a reasonable proxy for City-specific dry and wet weather flows. Based on our experience, 60% allocation to stormwater seemed high and we recommend that this calculation be refined during the implementation phase by obtaining flow data during wet and dry days at the interconnection between City and NBC's systems. For the purposes of this feasibility study, combined/sanitary sewer system costs and joint sewer and stormwater O&M line items are allocated 40% to sewer and 60% to stormwater under this scenario.

4.2. Revenue Requirements

Following the allocation of joint sewer and stormwater system costs, the resulting current and future O&M and capital costs attributable to each program were imported into the "Revenue Requirements" tab in the rate model. The fee revenue requirement is the amount of revenue that will need to be generated by each fee recover all costs associated with each utility's program. The "Revenue Requirements" tab is split into two sections for sewer and stormwater fees revenue requirements and uses the distinct costs associated with each program: operational costs allocated to either sewer or stormwater, reserve requirements, annual pay-as-you-go (PAYGO) capital costs allocation to either sewer or stormwater, and capital debt service requirements for each program to calculate the total annual cost of each program.

4.2.1. Assumptions

For the purposes of a feasibility study, Raftelis made assumptions on items that can impact the estimates of revenue requirement for each fee, which are referred to as revenue offsets. All these assumptions should be confirmed prior to finalizing the fees. An example of a revenue offset is the annual General Fund contribution.

- It's assumed that the programs will continue to be funded through the General Fund through the midpoint of FY 2027 when the fee(s) are expected to be implemented.
- In FY2028, the General Fund would contribute $1M toward the costs of each program, and it will begin to offset the costs of the Customer Assistance Program (CAP).
- In FY 2029 and beyond, the General Fund would continue to offset the costs of CAP participation for eligible customers.

Based on discussions with City staff in September-December 2024, our team assumed an annual offset of $1-2M for sewer and $1-3M for stormwater via federal or state grant funding directed at capital projects during the study period. The model also reflects DPW's feedback at that time that most of the remaining $8M PPBA bond funding issued in FY 2025 would be spent down in FY 2026, leaving approximately $1M to be split evenly at $500,000 each between the sewer and stormwater programs to offset the revenue requirements for FY 2027.

While the assumptions listed above decrease the required revenue needs, other assumptions can result in increasing the revenue requirements. One example of this is the assumption of collection rates for each utility bill, currently estimated at 94% for sewer and 88% for stormwater. Since every customer will not likely pay their utility bills, the rate model must take that lost income (or revenue reduction) into account when determining the revenue requirement for both fees. The difference between the projected collection rates is based on the current legal framework that enables the creation of each fee discussed in Task 3, with the sewer fee legislation allowing for property liens to enforce collection and the stormwater fee legislation not granting those powers to municipalities. Creating a stronger legal mechanism to drive stormwater fee collections, such as property liens, could help increase the collection rate.

Another important assumption is that the City would issue revenue bonds from FY 2029 through FY 2035. These new bonds would result in an estimated future debt of $42M for sewer and $110M for stormwater over a 10-year period. Having the dedicated revenue stream from the new sewer and stormwater fees would enable the City to issue and repay these bonds, securing funding for needed program expansion. An additional benefit of financing the capital program is that it would smooth out the changes in annual revenue requirements as new projects are added to the program scope. As a result, using bond financing would also smooth out the rates trajectory to be more slow and steady over time and promote intergenerational equity by spreading out the cost burden of long-term investments between current and future customers, as both groups benefit from these projects. These benefits are offset by the increased overall cost of interest payments that would be part of the repayment schedule. For the purposes of the feasibility study, Raftelis assumed that debt would be issued 1.5 years after the assumed implementation of both fees in FY 2027 to allow for time to confirm that fee revenue projections compare favorably with actual collected revenues. Our team also made assumptions on the principal, rate, and term of the issued debt based on common industry trends, which were used to make annual debt service projections in the "Future Debt" tab of the rate model. If the City decides to include debt in a future fee implementation, the exact terms of any issued debt will need to be finalized to provide accurate input data for fee revenue requirement calculations.

It is recommended that both the sewer and stormwater utilities build up an operating reserve in case emergency funds are ever needed. Raftelis assumed that the City would opt to implement a 25% operating reserve, the equivalent of 3 months of annual operating expenses, for both utility programs. This recommendation is built into the model's revenue requirements for both fees.

Finally, Raftelis made some assumptions regarding the scope of the CAP that the City expressed an interest in creating along with the new fees. Raftelis estimated that the program would constitute a revenue reduction equal to 1% of annual program revenue, which is in line with revenue reductions experienced by other utilities including the regional example of Boston Water and Sewer Commission (BWSC). The assumed size of the CAP for sewer and stormwater fees would start at approximately $42,000 in FY 2027 and increase over time to approximately $259,000 by FY 2035. While each of these assumptions were sufficient to generate estimated revenue requirements and rates for the feasibility study, the impacts of the CAP should be refined during the pre-implementation and implementation phases of the project.

Additional work on the financial model in future phases of the project will help the City refine the accuracy of the fees as policies regarding utility administration are developed further. Revisiting and finalizing the assumptions discussed above and adding new data points, such as income from investments earnings and anticipated late charges, will ensure the developed revenue requirements and resulting rates are as accurate as possible.

4.2.2. Sewer Revenue Requirements

Raftelis used the costs from the separate sewer system, allocated sewer costs from the combined system, and estimated annual debt service payments for sewer projects and operating reserve targets to derive the total revenue requirement for the sewer fee. Table 5 below details the costs associated with each of the revenue requirement components.

Table 5. Sewer Fee Revenue Requirements

Sewer Rev. Requirement	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Operating Expenses	$3,288,932	$3,787,827	$4,151,232	$4,605,318	$5,060,826	$5,228,507	$5,622,480	$6,271,870	$6,536,498
Operating Reserve	$822,233	$946,957	$1,037,808	$1,151,330	$1,265,206	$1,307,127	$1,405,620	$1,567,967	$1,634,124
Capital Costs	$491,420	$1,847,704	$167,616	$958,573	$2,000,871	$1,442,315	$2,989,340	$976,912	$1,101,147
Proposed Debt Service	-	-	-	$183,470	$428,097	$733,881	$1,100,821	$1,467,761	$2,018,172
Total – Sewer Rev. Requirement	**$4,602,585**	**$6,582,488**	**$5,356,656**	**$6,898,691**	**$8,755,000**	**$7,977,948**	**$10,017,440**	**$10,284,510**	**$11,289941**

4.2.3. Stormwater Revenue Requirements

Raftelis used the costs from the separate stormwater sewer system (MS4), allocated stormwater costs from the combined system, and estimated annual debt service payments for stormwater projects and operating reserve targets to derive the total revenue requirement for the stormwater fee. The Table 6 below details the costs associated with each of the revenue requirement components.

Table 6. Stormwater Fee Revenue Requirements

Stormwater Rev. Requirement	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Operating Expenses	$2,193,276	$2,598,451	$2,815,542	$3,065,061	$3,356,637	$3,477,686	$3,707,612	$3,979,496	$4,180,396
Operating Reserve	$548,319	$649,613	$703,885	$766,265	$839,159	$869,421	$926,903	$994,874	$1,045,099
Capital Costs	$1,535,543	$1,394,366	$1,793,061	$1,990,056	$366,507	$562,681	$857,553	$1,178,346	$1,470,098
Proposed Debt Service	-	-	-	$244,627	$856,194	$1,834,702	$2,935,522	$4,158,657	$5,381,791
Total – Stormwater Rev. Requirement	**$4,277,137**	**$4,642,430**	**$5,312,488**	**$6,066,009**	**$5,418,497**	**$6,744,490**	**$8,427,590**	**$10,311,373**	**$12,077,384**

4.3. Stormwater ERU Development

The Equivalent Residential Unit (ERU) is a billing unit often used by stormwater utilities with impervious area-based rate structures. An ERU reflects the typical amount of impervious area on a single family residential (SFR) parcel and allows for simplified billing of the largest customer group: SFR properties. Impervious surface area is the most common rate structure among those communities with stormwater fees because it is a good measure of a ratepayer's demand on the stormwater system. The more impervious area on a property, the more stormwater the property generates, and the greater the demand for the utility's stormwater management services.

The information provided below describes Raftelis' methodology for determining the City's ERU and the results of our analysis.

4.3.1. Data Available for Analysis

Raftelis' analysis was based on 2023 Spring Rhode Island Digital aerial imagery from University of Rhode Island (URI)[16], accessed through ArcGIS Online and geographic parcels and information from the City in January 2024. Parcel data used for this analysis was provided by City staff on May 9, 2024, and included parcel use code and parcel use code description.

4.3.2. Methodology

A Raftelis GIS analyst began by identifying a random sample of 436 parcels categorized as SFRs in parcel data. This sample size was selected to provide a high level of confidence in the result. SFRs were categorized using parcel use code data from geographic parcel data, with use codes and descriptions of '01', Single Family and '02', 2-5 Family parcels. Based on visual observation, the overall impervious characteristics of the two property types were determined to be similar enough to include in the sample. 224 properties with use code of '01' and 212 properties with use code of '02', which match the proportion of these property types within the City overall at 51.4% and 48.6%, respectively.

Using visual review of the sampled SFR parcels, our team confirmed ed that the parcels randomly selected in the sample encompassed a representative range of geography. The final sample list is attached as Appendix B. The map in Figure 6 shows the final, measure SFR sample parcels throughout the City. The final, measured SFR sample parcels are marked with red dots. All other parcels are shown in blue.

[16] https://maps.edc.uri.edu/rigis/services/

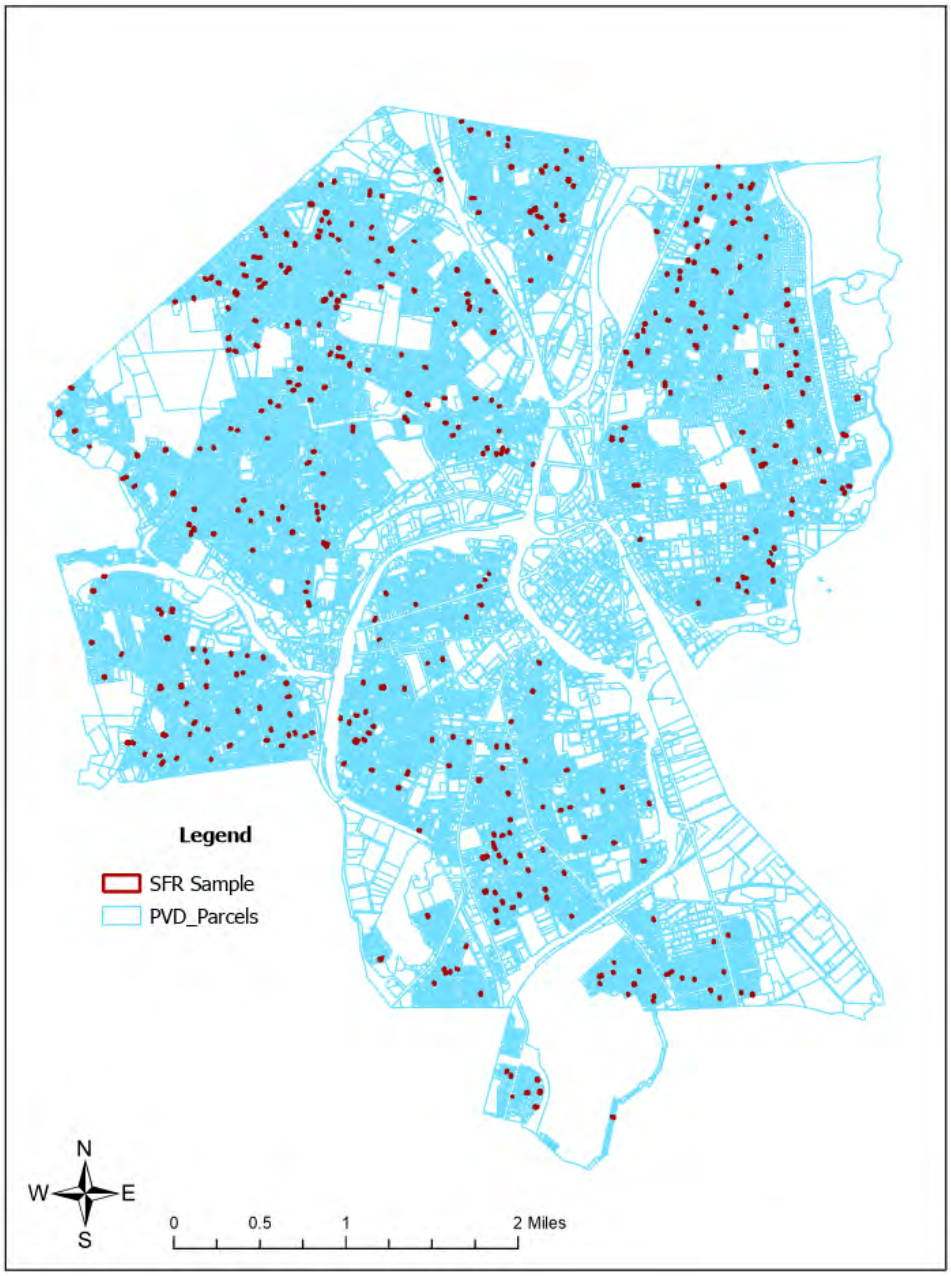

Figure 6. City of Providence SFR Sample Parcel Locations

Overlaying parcels on top of 2023 imagery in ArcGIS software, Raftelis created new spatial features to represent the full impervious area on each property based on visual assessment of the property. The end goal of this process was a dataset containing polygons for each sampled SFR that met the City's definition of impervious area. According to the City's Zoning Ordinance, "impervious surface coverage" is "a measure of intensity of land use that represents the portion of a site that is occupied by structures, pavement, and other impervious surfaces that do not allow for the absorption of water into the ground. Regardless of the surface treatment, all areas designated or used for parking or access to parking shall be considered impervious surfaces."

Figure 7. Examples of Impervious Area Digitization on SFR Parcels in City of Providence

Figure 7 shows examples of digitized SFR properties. Each example property is outlined in bright blue, and the impervious area features created by Raftelis are shown in translucent blue. Impervious surfaces delineated exclude landscaped areas but include buildings, paved surfaces, unpaved areas used for parking and driveways per the City's definition, and outbuildings.

4.3.3. ERU Analysis Results and Recommendations

The 436 sampled parcels had a range of impervious area amounts from a minimum of 991 square feet to a maximum of 7,931 square feet. This range is clustered fairly tightly in the context of Raftelis' experience with developing stormwater ERUs and residential rate structures and is representative of a dense urban area in Northeastern U.S.

Raftelis compared the IA statistics of the Single Family (use code '01') properties to the 2-5 family (use code '02) properties. While the IA statistics tended to skew slightly higher for 2-5 family parcels, the overall range of imperviousness is similar for both property types. The ERU, while represented by a single value, does correspond to a range of imperviousness and so the entire range should be considered when determining what properties to include. Based upon the data shown in Table 7, Raftelis recommends including both property types in the SFR customer class.

Table 7. Impervious Area Statistics for Sampled SFRs

	Parcels in Sample	Median IA (sq ft)	Average (mean) IA (sq ft)	Minimum IA (sq ft)	Maximum IA (sq ft)
Single Family	224 (51.4%)	2,456	2,566	991	7,225
2-5 Family	212 (48.6%)	3,187	3,297	1,580	7,931
All Parcels	436 (100.0%)	2,706	2,921	991	7,931

Raftelis recommends using the median value of impervious area on all SFR properties to calculate the ERU. This value is more statistically robust and less sensitive to outliers (the very small or very large impervious surface amounts in the sample) than an average (mean) value would be, and is therefore a more accurate representation of SFR impervious area within the City. Using the median value, the ERU value of this sample is 2,706 square feet of impervious area, as shown in Figure 8. Raftelis recommends the City round this value

to 2,700 square feet, for ease of customer communication. In comparison, the mean value is 2,921 square feet of impervious area.

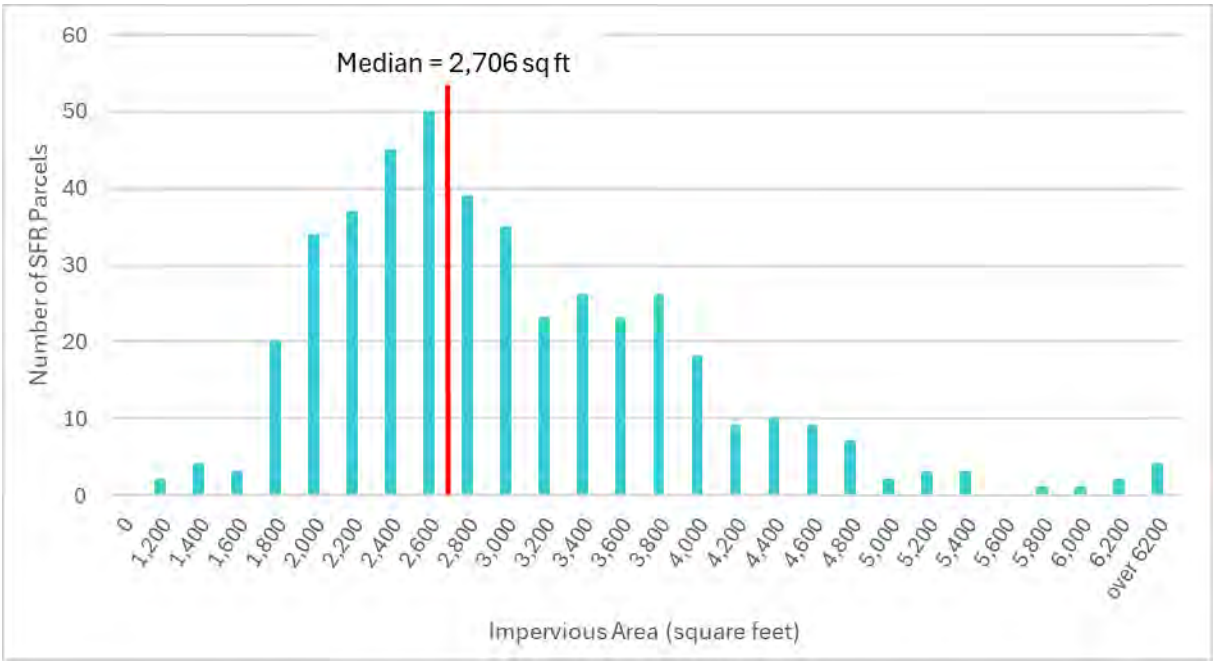

Figure 8. SFR Sample Impervious Area Distribution

At the conclusion of this analysis, Raftelis recommends that the City use the measured and rounded median IA of 2,700 sq ft as its ERU value for the purposes of the feasibility study. The relatively tight range of IA values in the SFR sample caused our team to recommend a flat residential rate structure as a starting point. Should the City decide to move forward with stormwater fee implementation, the City could also consider using a tiered rate for SFRs, where each parcel is placed into one of several tiers based on measured or estimated IA and charged a proportionate ratio of the base ERU. The histogram in Figure 8 does not offer strong suggestions for natural tier breakpoints, however, and so the City may consider expanding the sample size to accommodate a tiering analysis.

4.4. Rate Design

Once the revenue requirements for both the sewer and stormwater programs were calculated, Raftelis developed rate structures based on industry standards that would equitably and adequately recover the costs of each program. The design of each program's rate structure is described in more detail below.

4.4.1 Sewer Rate Design

The rate structure for the sewer utility is made up of two components. One component of the rate structure is a volumetric charge that calculates the fee based on the volume of water consumption, while the fixed charge or base fee scales with the customer's meter size, with larger meters having higher fees. Raftelis built four different versions of this rate structure into the rate model, each applying different ratios of the revenue requirement that would be recovered by the volumetric and base fee, as shown in Table 8. Option 2 recovers 90% of the sewer revenue requirement through the volumetric fee and the remaining 10% gets recovered through the base fee. Raftelis recommends using this rate structure since it minimizes the impact on the average residential water user while still allocating an appropriate amount of costs to be recovered equally from all customers via a base fee.

Table 8. Sewer Revenue Recovery Options

Revenue Recovery Options	Recover from Volumetric Fee (%)	Recover from Base Fee (%)
Option 1	100%	0%
Option 2	90%	10%
Option 3	80%	20%
Option 4	75%	25%

4.4.1. Stormwater Rate Design

Raftelis designed the stormwater rate structure based on parcel impervious area (IA). At this point in the project, the City did not consider gross area or fixed fee rate structure components discussed in Task 3. The recommended rate structure uses a City-specific ERU value of 2,700 square feet of IA as the billing unit. The stormwater rate structure charges single family residential (SFR) and non-single family residential (NSFR) properties in two different ways. SFR parcels containing 1-5 family homes are each billed at a flat rate of 1 ERU since the ERU value represents the amount of impervious area on an average single-family home in the City. For this phase of the project, the City chose not to pursue investigating tiered residential rates. However, this analysis is being considered for future phases.

Within the proposed stormwater rate structure, NSFR customers would be charged in increments of whole ERUs based on a calculation of the total amount of measured impervious area on their property divided by the City ERU. The resulting calculation would be rounded up to the nearest whole number to determine the amount of ERUs the NSFR parcel gets billed. For example, a NSFR property with 8,000 square feet of impervious area would get charged for 3 ERUs (8,000/2,700 = 2.96, rounded up to 3 ERUs).

4.5. Revenue Projections

4.5.1 Sewer Revenue Projections

Prior to calculating the projected sewer fee revenues, Raftelis first had to estimate the units of service for the sewer program. To complete the estimation process, Raftelis obtained 3-years of water billing data from the Providence Water Supply Board that contained a view of each account's monthly billable water consumption and associated water meter size. The estimated units of service for the volumetric and base charge can be found in Table 9 and Table 10. We assumed 0% net growth in sewer accounts during the study period.

Table 9. Estimated Units of Service for Sewer Base Fee, FY 2027-20235

Estimated Sewer Base Fee Units of Service (number of accounts)	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
5/8"	25,497	25,497	25,497	25,497	25,497	25,497	25,497	25,497	25,497
3/4"	4,871	4,871	4,871	4,871	4,871	4,871	4,871	4,871	4,871
1"	2,089	2,089	2,089	2,089	2,089	2,089	2,089	2,089	2,089
1.5"	879	879	879	879	879	879	879	879	879
2"	752	752	752	752	752	752	752	752	752
3"	62	62	62	62	62	62	62	62	62
4"	19	19	19	19	19	19	19	19	19
6"	22	22	22	22	22	22	22	22	22
8"	12	12	12	12	12	12	12	12	12
10"	2	2	2	2	2	2	2	2	2

Table 10. Estimated Units of Service for Sewer Volumetric, Fee FY 2027-2035

Estimated Volumetric Units of Service (water consumption)	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Residential	4,099,431	4,099,431	4,099,431	4,099,431	4,099,431	4,099,431	4,099,431	4,099,431	4,099,431
Commercial	2,325,154	2,325,154	2,325,154	2,325,154	2,325,154	2,325,154	2,325,154	2,325,154	2,325,154
Industrial	24,023	24,023	24,023	24,023	24,023	24,023	24,023	24,023	24,023
Total – Volumetric Base Rate Units of Service (CCF)	**6,448,608**	**6,448,608**	**6,448,608**	**6,448,608**	**6,448,608**	**6,448,608**	**6,448,608**	**6,448,608**	**6,448,608**

Once the unit of service estimation was complete, Raftelis loaded the units into the "Sewer Rate Design" tabs of the financial model to calculate the volumetric and base rates under the developed rate structure. The volumetric rates were calculated by dividing 90% of the annual revenue requirement by the total amount of estimated hundred cubic feet (CCF) to get the volumetric rate for the sewer fee. Raftelis calculated the base rate by first multiplying the number of accounts in each meter size by a meter differential and then summing the resulting product from each meter size. Once that process was completed, our team divided the remaining 10% of the annual revenue requirement by the sum that was derived in the previous step and multiplied by the meter differential to calculate the annual rates. Since the utility bill would be charged on a quarterly basis, our team took the calculation one step further and divided the annual rate by 4 to arrive at the quarterly rate for sewer system customers. The table below shows the quarterly rates over FY 2027 – 2035 planning period.

Table 11. Projected Quarterly Sewer Rates, FY 2027-20235

Fee Component	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Volumetric Charge per CCF	$0.59	$0.83	$0.80	$1.02	$1.30	$1.18	$1.49	$1.53	$1.68
Quarterly Fixed Charge:									
5/8" Meter	$2.04	$2.85	$2.73	$3.52	$4.47	$4.07	$5.11	$5.25	$5.76
3/4" Meter	$3.06	$4.27	$4.10	$5.28	$6.70	$6.11	$7.67	$7.87	$8.64
1" Meter	$5.10	$7.12	$6.83	$8.80	$11.17	$10.18	$12.78	$13.12	$14.40
1.5" Meter	$10.19	$14.24	$13.66	$17.60	$22.33	$20.35	$25.55	$26.23	$28.80
2" Meter	$16.31	$22.78	$21.86	$28.16	$35.73	$32.56	$40.88	$41.97	$46.08
3" Meter	$30.58	$42.72	$40.99	$52.79	$67.00	$61.05	$76.66	$78.70	$86.40
4" Meter	$50.97	$71.20	$68.32	$87.99	$111.66	$101.75	$127.76	$131.17	$143.99
6" Meter	$101.94	$142.40	$136.64	$175.97	$223.32	$203.5	$255.53	$262.34	$287.98
8" Meter	$163.10	$227.84	$218.62	$281.56	$357.32	$325.60	$408.84	$419.74	$460.78
10" Meter	$234.46	$327.52	$314.27	$404.74	$513.64	$468.05	$587.71	$603.38	$662.36

Relying on the derived sewer rates, our team used the model to calculate the projected revenue over the planning period. Raftelis calculated the annual revenue by multiplying the base rate for each meter size, which ranges from $2.04/quarter for 5/8" meters to $234.46/quarter for 10" meters in FY 2027, by the associated number of accounts with that meter size and adding each of the products together. The revenue from the volumetric rate was then calculated by multiplying the total number of CCFs by the per CCF rate, ranging from $0.59 in FY 2027 to $1.68 in FY 2035, to arrive at the total revenue per quarter from the volumetric charge. Once the projected revenues for the base and volumetric charges were calculated, the two totals were added together and multiplied by four to derive the projected annual revenue throughout the planning period to verify the calculations. Note that the calculated revenue for FY 2027, which is the projected implementation year for the fee, was divided in half since the fee will only be collected for half of the fiscal year. The annual projected sewer fee revenue for the 10-year planning period is shown in Table 12.

Table 12. Annual Projected Sewer Fee Revenues, FY 2027-20235

Fee Component	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Volumetric Charge Revenue	$1,913,123	$5,344,935	$5,128,714	$6,605,130	$8,382,447	$7,638,461	$9,591,166	$9,846,871	$10,809,518
Fixed Charge Revenue	$212,569	$593,882	$569,857	$733,903	$931,383	$848,718	$1,065,685	$1,094,097	$1,201,058
Total – Sewer Fee Revenue	**$2,125,692**	**$5,938,817**	**$5,698,571**	**$7,339,033**	**$9,313,830**	**$8,487,179**	**$10,656,851**	**$10,940,968**	**$12,010,575**

4.5.2 Stormwater Revenue Projections

Prior to calculating the projected stormwater fee revenues, Raftelis first estimated the units of service for the stormwater fee. To complete the estimation process, Raftelis totaled the number of parcels within the single-family residential customer class and assessed each with the assumed flat rate of 1 ERU to get the estimated number of ERUs for SFR properties. For NSFR parcels, Raftelis used a double-blind estimate approach to estimate of units of service. The double-blind estimate process starts by overlaying a grid on all parcels within the City using ArcGIS software, with aerial imagery visible in the background, and obscuring all of the SFR parcels and roads, which are not charged. Figure 9 and Figure 10 below show City imagery and parcels with the grid overlay and SFR parcels and city roads blocked out.

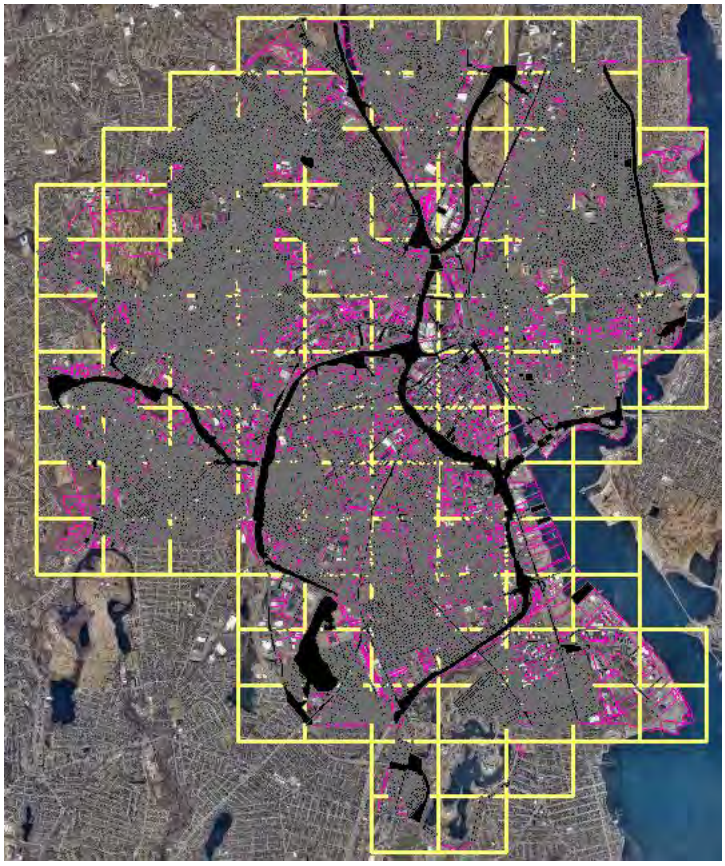

Figure 9. City Imagery and Parcels with Grid Overlay

For each grid cell, three analysts independently estimated the visible percentage of IA. These three estimates were later compared and revised for grid cells where the impervious estimates differed significantly. The average percentage of NSFR impervious area was calculated for each grid cell and multiplied by the area of the grid cell, resulting in the estimated NSFR IA for each cell. The estimated IA for each grid cell was then summed across the City, the sum divided by the ERU value of 2,700, and rounded up to the nearest integer to arrive at the estimated NSFR ERUs.

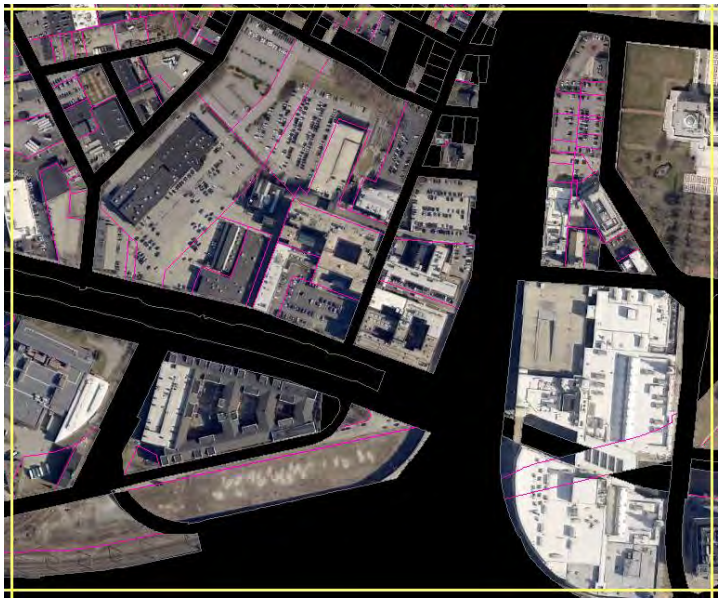

Figure 10. Single Grid Square with Parcels and Imagery

Finally, Raftelis summed the estimated NSFR and SFR ERUs to derive the total estimated units of service for the stormwater fee. The estimated current and projected units of service (ERUs) for the stormwater fee can be found in Table 13 and Table 14 below. For projected units of service, we assumed minimal annual IA growth of 0.03%.

Table 13. Estimated Stormwater Units of Service - Current

Estimated Current Units of Service	
Estimated IA, Citywide (sq ft)	144,578,262
ERU value (sq ft)	2,700
Estimated NSFR ERUs	53,548
SFR ERUs	28,659
Estimated Total ERUs	**82,207**

Table 14. Estimated Stormwater Units of Service - Projected

Estimated Total Units of Service	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Total – Estimated Units of Service	82,281	82,306	82,331	82,355	82,380	82,405	82,430	82,454	82,479

Once the unit of service estimation was complete, Raftelis loaded the units into the "Storm Rate Design" tab of the financial model to calculate the rates under the developed rate structure. The stormwater rates were calculated by dividing the annual revenue requirement by the total amount of estimated ERUs, resulting in the annual rate per ERU for stormwater customers. Since the utility bill would be charged on a quarterly basis, Raftelis divided the annual rate by 4 to arrive at the quarterly rate for stormwater system customers. Table 15 below shows the annual and quarterly rates over the 10-year planning period.

Table 15. Projected Annual and Quarterly Stormwater Rates, FY 2027-2035

Fee Component	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Annual Charge (per ERU)	$49.36	$50.87	$74.17	$84.66	$75.60	$94.08	$117.52	$143.74	$168.31
Quarterly Charge (per ERU)	$12.34	$12.72	$18.54	$21.17	$18.90	$23.52	$29.38	$35.94	$42.08

Using the estimated stormwater rates, our team modeled the projected revenue over the 10-year planning period. Raftelis calculated the annual revenue by multiplying the annual rate by each year's estimated units of service. Note that the calculated revenue for FY 2027, which is the projected implementation year for the fee, was divided in half since the fee will only be able to be collected for half of the year. The annual projected stormwater fee revenue for the 10-year planning period is shown in Table 16 below.

Table 16. Projected Annual Stormwater Fee Revenue, FY 2027-2035

Fee Component	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Total – Stormwater Fee Revenue	$2,030,719	$4,186,701	$6,106,308	$6,972,424	$6,228,157	$7,752,287	$9,686,886	$11,852,153	$13,882,052

4.6. Customer Impacts Analysis

The steps that our team took in the previous sections in this task were aimed at establishing fees that recovered the cost of sewer and stormwater service, met financial policy goals (e.g., maintaining a 3-month operating reserve), and did so at the lowest possible cost to future utility customers. Raftelis understood that the amount customers get charged for the sewer and stormwater fees was a key consideration for developing a recommendation as Providence residents already pay sewer treatment fees to NBC and water supply charges to Providence Water. Additionally, it is not currently anticipated that the City would be lowering property taxes if these new fees are established due to many other commitments that it faces. As such, the new sewer and stormwater fees would need to be set as low as possible to minimize customer impacts.

To document customer impacts of the estimated stormwater and sewer rates, Raftelis evaluated the quarterly cost to an average residential customer. Raftelis defined an "average residential customer" as one that consumes 4 CCF per month and gets charged for 1 Equivalent Residential Unit (ERU) of impervious area on their property. Figure 11 below represents the projected impacts of the City's proposed sewer and stormwater fees starting in FY 2027 though FY 2035 and shows that, accounting for inflation, estimated cumulative bill ranges from $21.50 in FY 2027 to $67.95 in FY 2035.

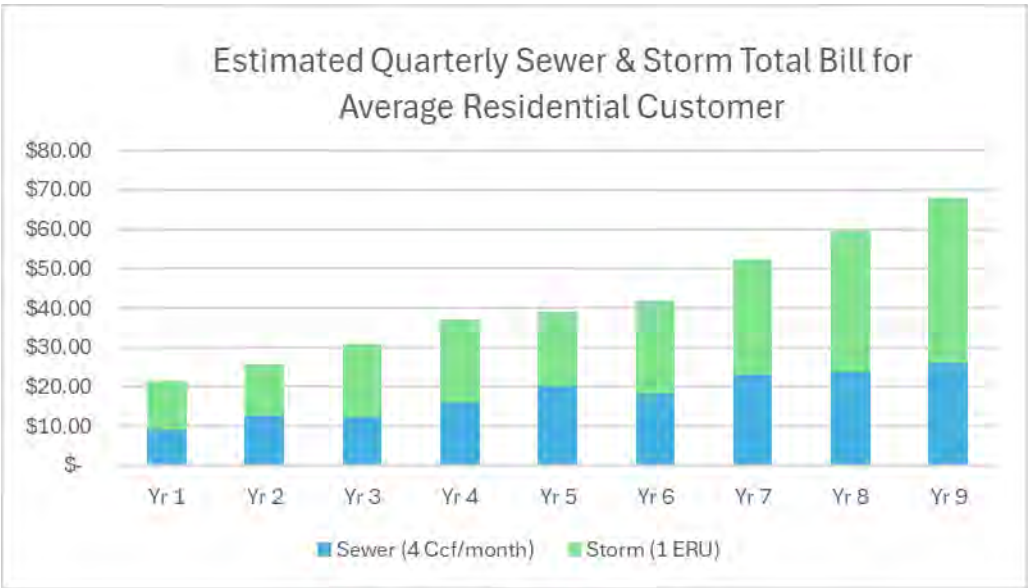

Figure 11. Estimated Quarterly Sewer & Stormwater Total Bill for Average Residential Customer

4.7. Tax-Based Approach

Our team also evaluated the feasibility of a tax-based approach to funding the sewer and stormwater programs, which was presented to the Task Force along with stormwater and sewer costs and draft rates on December 6, 2024. Based on our analysis, the combination of City's projected sewer and stormwater costs and our understanding of the annual 4% tax levy increase cap discussed in Task 3 of this report would make it difficult for the City to commit to the tax funding approach as a sustainable source of sewer and stormwater funding over the next 10 years. It is projected that, due to the City's many financial commitments and fixed costs including pension, medical and schools, the City may find itself needing to increase the levy at the 4% level annually for the foreseeable future. At the same time, the projected 10-year revenue needs for the stormwater and sewer programs would require the City to commit a greater and greater portion of its total tax levy to the needs of these two programs. To adequately fund these two programs, the City would have to allocate 1.88% of the total 4% levy increase (nearly half) in Year 2 of the planning period and 2.56% in Year 6. This level of tax funding commitment is unlikely to be practically feasible. As such, selecting the tax funding approach would likely commit the sewer and stormwater programs to the status quo of underfunding relative to the City's goals and regulatory obligations.

Furthermore, under the tax funding approach, the tax-exempt properties would not be contributing to covering increased sewer and stormwater costs. As a result of the exclusion of tax-exempt properties, other customers would bear additional responsibility in covering the increased program costs. Since tax-exempt properties contribute to the demand placed on the City's sewer and stormwater systems, projected units of service from these properties are included in the estimated total units of service for City-wide sewer and stormwater fees. Note, however, that State properties would be exempt from the stormwater fees based on the enabling legislation discussed in Task 3 of this report. For this feasibility study, State-owned properties were included within the total projected units of service for the stormwater fee due to the estimation scale. The City expressed an interest in understanding the impact of removing State- and/or City-owned properties from the total units of service on projected rates in future phases of this project and fully developing its understanding of the equity of either approach.

5. Task 5: Administrative Framework

The creation of a new stormwater and sewer fee will necessitate new utility administration costs. To estimate the scope and extent of these costs, Raftelis met with City staff to review billing options, technology and software systems currently being used, as well as desired staffing levels to support the potential new sewer and stormwater utilities. Based on these discussions, our team developed two approaches to addressing the administrative needs of the new utilities and three billing options for City consideration of their preferred approach to a future fee implementation.

In addition to the development of billing options and funding approaches, Raftelis discussed the feasibility of instituting a customer assistance program (CAP) for the sewer and stormwater fees to provide support for eligible customers. This chapter will address the framework and implementation approach for a potential CAP, while the possible customer impacts of a CAP was discussed earlier in this report.

5.1 Utility Administrative Considerations

As the City makes decisions regarding the funding method for the expanded sewer and stormwater programs, it is important to consider the additional administrative responsibilities that come along with implementing a sewer and/or stormwater utility. The City will need to add a number of administrative tasks to support the creation of consistent and accurate stormwater and sewer bills, both for the initial utility implementation and over time. The scope of these tasks will be driven primarily by the decision on how to bill the new fees. Moreover, the City will need to consider how to handle administrative responsibilities such as maintenance of GIS data, which would serve as basis for stormwater billing, and management of monthly Providence Water data, which would serve as basis for sewer billing. In addition to regular data maintenance, it will be important for the City to consider how the GIS and Providence Water data would be transformed into individual bills for each user fee using the selected rate structures discussed under Task 4. For the purposes of this feasibility study, Raftelis assumed that the City would acquire or internally develop a tool similar to the custom stormwater billing software that Raftelis previously developed for Boson Water and Sewer Commission (BWSC) to help with periodic creation of sewer and stormwater fees in-house. Another option is to outsource the utility administration needs to handle data maintenance and bill creation. These and other administrative considerations, such as customer support, handling bill disputes and appeals, stormwater credit approval and tracking, and considerations for developing a CAP, are explored in greater detail in the following sections of this report.

5.2 Billing Method

The selection of the billing method impacts the seamlessness of fee implementation and its ongoing administration, as well as customer understanding of the fee. Different billing methods can drive variations in collection rate, staff support, and policy changes. To help the City understand potential billing options, Raftelis discussed three potential billing methodologies and evaluated the pros and cons of each method.

5.2.1 Existing Water or Sewer Utility Bill

Currently, Providence residents receive utility bills from NBC for sewer treatment and another from Providence Water for water supply. Both entities also provide customer service and bill customers in other jurisdictions in addition to the City and are therefore subject to Rhode Island Public Utilities Commission (PUC) oversight. The City is exploring the possibility of including Providence sewer collection and stormwater charges on one of these current bills, allowing the City to leverage existing billing and customer

service staff, policies, and procedures at either of these organizations to ease the workload of implementing a new fee. Additionally, since existing utility bills have a payment enforcement mechanism, including the new fees on the existing bill would likely result in higher collection rates than if they were on a standalone bill. Note that the City would likely need to enter into an agreement with NBC or Providence Water for the cost of providing billing services, and this cost is unknown at this time. Including the new fees on either of these existing bills may require changes to their State enabling legislation and PUC approval. However, the extent of PUC oversight of the rate setting for the new fees is unknown at this time. If required, PUC oversight would add administrative costs to support a formal rate case process, but would also provide the public with regulatory assurance that the fees are set fairly, would provide transparency, and may assist with public acceptance of the new fees.

Another challenge with the joint billing approach is that it would require close collaboration with NBC or Providence Water to include the new fee on one of the existing bills. Even if the City were to come to an agreement with one of these entities to include the new fee on an existing bill, the City would still have to expend some additional resources to coordinate with Providence Water or NBC to support billing and utility administration. Activities could including training of City and the other entity's staff on joint customer service policies specific to Providence sewer and stormwater customers, technical support for creating bill files that integrate with the existing billing system, and development of data protocols for ongoing data maintenance in response to customer disputes.

A benefit of partnering with Providence Water or NBC would be the potential to expand the program to create a regional approach to stormwater and/or sewer management over time. If other municipalities in the service area adopt similar user fees, the combined efforts could result in cumulative cost savings and watershed-wide strategic investments.

5.2.2 Tax Bill

Another possible billing method is adding the sewer and stormwater fee bills in the same envelope as the existing City property tax bill. By including the stormwater and sewer bill with the tax bill, the customer may benefit from a simplified billing process and the City may benefit from a higher collection rate for the new fees since some customers are accustomed to receiving and paying the tax bills. Additionally, this option would result in lower billing postage costs because the tax bill is only sent once a year and not quarterly, as is assumed for stand-alone billing and discussed below. Since the City allows quarterly payments of annual tax bills, adding the new sewer and stormwater fees would not impose a large annual lump-sum burden on customers compared to the quarterly stand-alone bill.

The tax billing option could also present challenges. Like the standalone bill option discussed below, the tax bill method could experience issues with bill collection due to the current lack of a payment enforcement mechanism for the stormwater fee. Another concern is the potential confusion from tax-exempt properties if they were to receive a bill to pay their sewer and stormwater fees since it would be the first time that these properties receive a bill from the City Tax Assessor. Something that could present additional complexity is whether the new fees would be included in escrow payments for property owners who pay property taxes through their mortgage companies. Further engagement and research is needed to clarify whether mortgage companies would add the utility bill to escrow payments if the utility fee isn't technically part of the tax bill itself. Additionally, even if all mortgage companies were to set up utility payments via escrow, the City would need to expend time and resources to do outreach and education for both customers and mortgage companies prior, during, and after utility implementation.

5.2.3 Stand-Alone Bill

Under this billing method, the City would send sewer and stormwater fees as a standalone bill on a quarterly basis. Including the fees on a standalone bill would create flexibility on the development of billing and customer service policies since they would not need to follow the existing billing policies of NBC, Providence Water or City Tax Assessor. For stormwater billing, IA measurements, ERU billing units, and resultant fees would already be parcel-based and would not need to be matched to existing utility accounts on the standalone bill option. For the sewer fee, the parcel-based stormwater fee would need to be matched to new sewer accounts for concurrent billing.

Customer service and billing system needs associated with this billing method would likely require a larger effort from City administration than the existing bill option since the stand-alone bill would not be able to rely on existing NBC, Providence Water, or City Tax Assessor procedures, policies, and staff to simplify the implementation process and ease the ongoing workload for the City. Additionally, the standalone billing method would likely be more costly than the tax bill option due to the assumed billing frequency: currently, standalone bill is envisioned to be sent quarterly to make the new fees more affordable and avoid "sticker shock." Compared to the annual tax bill, this would result in higher printing and postage costs and a likely increase in the amount of time that will need to be devoted to customer support for each billing cycle.

Another concern with this method is that the City would only have authority to lien for delinquent payments on the sewer bill but not on the stormwater bill because the stormwater enabling legislation currently doesn't provide for an enforcement mechanism, e.g., water shutoff, as discussed in Task 3. If the state law is not changed, this legal circumstance would likely lead to a lower collection rate for the stormwater fee under the stand-alone billing option than other billing methods, especially for properties that are billed only for stormwater and not for sewer service.

5.3 Organizational Framework Approach

Understanding the costs associated with the administration of the new stormwater and sewer fees is essential when considering the feasibility of a future fee implementation. Creation, collection, data maintenance, and customer service for the new fees would require additional staff time. This time, the development of policies, and implementation of new tools that all contribute to the total program O&M costs. Different organizational frameworks that address the administrative needs of the new fees can influence these administrative costs.

Raftelis worked with City staff to explore two approaches to program implementation and administration as described below. These approaches illustrate different levels of City staff involvement in the development of policies and tools and delivery of utility-related services. Raftelis estimated the cost burden associated with each approach using the financial model to assist the City during their considerations.

5.3.1 Less Outsourced Approach

Under this approach, the involvement of contracted service providers would be kept to a minimum, resulting in City staff carrying out a majority of the workload for the ongoing administration of the new fees after their initial implementation. By conducting most of the policy, procedure, and data development and maintenance in-house, the City would have more autonomy in the decision-making process and more direct connection with customers in the absence of a contracted third party. However, opting to not utilize contracted service providers also means that the City would need to bring on an estimated four to six additional full time employees (FTEs) to support billing, customer service, and data maintenance. Creating these new positions would result in additional costs that would need to be recovered by the sewer and stormwater fees and may

have labor relation implications that would need to be considered. The estimated internal and contracted costs associated with the less outsourced approach are shown in Table 17 below.

Table 17. Estimated Annual Costs for Less Outsourced Approach to Billing

Contracted Expense	Annual Cost
Bill Printing/mailing	$198,000
Lockbox, banking	$149,400
IT Support (e-pay system)	$50,000
Utility billing software support	$75,000
Total: Contracted Expenses	**$472,400**
Internal Expense	**Annual Cost**
FTE 1: Utility Billing Supervisor	$70,743
FTE 2: Utility Billing Support	$38,487
FTE 3: Teller 1	$50,551
FTE 4: Teller 2	$50,551
FTE 5: Balancing 1	$67,973
FTE 6: Balancing 2	$67,973
Benefits (6 FTEs)	$229,265
Total: Internal Expenses	**$575,543**
TOTAL: Less Outsourced Approach	**$1,047,943**

When estimating costs in the table above, our team made assumptions that should be noted. The cost for bill printing and mailing was developed on the assumption that bills would be sent to the same number of customers that are currently receiving tax bills based on the information provided by the Tax Assessor, plus tax-exempt properties that would be responsible for paying the new utility fee. We assumed that the City would use the same vendor for utility billing as for current tax billing to take advantage of the existing vendor relationship. Costs in Table 17 assume that the City will decide to utilize the standalone bill method discussed above, where the City would send its own bill on a quarterly basis separate from the existing annual tax bill mailing.

Other contracted costs were estimated using costs from similar Raftelis projects. Lockbox and banking services would be needed to support off-site payment processing, and the City may consider expanding the current system used to e-pay taxes to include new utility fee payments. Utility billing system support assumes that the City would acquire or build a tool during the utility implementation process to create accurate bills, and that this tool would require maintenance provided through an annual contract to support ongoing utility administration. Lastly, our team estimated internal costs by using the annual salary of existing positions within DPW or the Tax Assessor's office that were similar to the proposed FTE's roles.

5.3.2 More Outsourced Approach

Under this approach, contracted service providers were assumed to have a more prominent role in the tasks associated with the administration of the new fees, resulting in a lighter administrative workload for City staff. By offloading the development and administration of policies, customer service, billing system, and data maintenance, the City would be able to decrease the number of FTEs that would need to be hired by the City to help support the new fees. However, allowing contracted service providers to handle more of the administrative workload could lead to less direct connection with customers and would likely be more expensive than the less outsourced approach: contracted costs may be higher than internal salaries and benefits, and there would still need to be some City staff time dedicated to coordinating contracted services. The estimated internal and contracted costs associated with the more outsourced approach are shown in the table below.

Table 18. Estimated Annual Costs for More Outsourced Approach to Billing

Contracted Expense	Annual Cost
Utility admin/Customer Service	$500,000
Bill Printing/mailing	$198,000
Lockbox, banking	$149,400
IT Support (e-pay system)	$50,000
Utility billing software support	$75,000
Total: Contracted Expenses	**$972,400**
Internal Expense	**Annual Cost**
FTE 1: Teller 1	$50,551
FTE 2: Teller 2	$50,551
Benefits	$66,727
Total: Internal Expenses	**$167,829**
TOTAL: More Outsourced Approach	**$1,140,229**

Many of the assumptions made by our team when developing the costs, such as for bill printing and mailing, lockbox, banking, IT support, and utility billing software support, were similar to the less outsourced approach. The utility administration and customer service costs were estimated by assuming that the supervisor, support, and balancer roles identified in the less outsourced approach above would be replaced by contracted service providers. However, our team assumed that the City would retain the option to take in-person payments, which would likely require two full-time tellers.

5.4 Customer Assistance Program

When thinking about the administrative framework that would be required to implement a new fee, it was important to the City to consider the feasibility of adding a Customer Assistance Program (CAP) that can provide support for emergency assistance and reduced rates for low-income, disabled, seniors, and other eligible customers. As previously discussed in Task 3, the City's legal counsel advised that Rhode Island state law does not preclude a CAP for utility customers, and a CAP in the form of a Discount Rate Program for

eligible customers already exists from Rhode Island Energy.[17] However, it should be noted no existing water or sewer utilities in the state currently offer a CAP. Additionally, no CAP for stormwater utility fees exists in Rhode Island since there is not an existing stormwater utility in the state. Therefore, the City would be unable to use an existing sewer or stormwater utility CAP from another Rhode Island city as a model for designing a CAP for the sewer and stormwater utility programs. However, the City could use existing CAPs for other utility programs in the state, such as the Rhode Island Energy program, and existing CAPs specific to stormwater and sewer utilities in other states, such as the BWSC discount programs discussed in Task 3, to create a CAP for their new utility fees.

There are several important considerations the City should think about when deciding to include a CAP as a part of the new fees. Regarding the effort it would take to verify eligibility for participating in the CAP, the City could align the program with other subsidy programs, such as Supplemental Nutrition Assistance Program (SNAP), similar to how Rhode Island Energy offers discounts to customers who qualify for government assistance programs. Aligning the program with other subsidy and assistance programs removes the need for the City to conduct its own eligibility verification and therefore lightens the administrative burden of the program. In addition to the required effort to administer the program, it is also important to consider how it will be funded. During this feasibility phase, Raftelis assumed that the CAP would be funded primarily by the City's General Fund, and the scope of the program would be about 1% annual revenues from the stormwater and sewer fees. However, the City could consider funding the CAP via sewer and stormwater fee revenues if desired as no legal restrictions on that approach appear to exist in Rhode Island.

[17] https://www.rienergy.com/site/ways-to-save/assistance-programs/discount-rates

6. Task 6: Utility Implementation Plan

Stormwater and sewer funding considerations are necessarily explored at a higher level during the feasibility study phase. The goal of this effort was to support the City through the initial program cost assessment, rate estimation, and engagement with the Stormwater and Sewer Assessment Task Force. This engagement resulted in the Task Force recommending that the City implement both the sewer and stormwater utilities to adequately fund the two programs going forward, as shown in Appendix C..

This section of the report describes recommendations for the next two phases of this project. During the pre-implementation phase, the City plans carry out additional tasks that, combined with the results of the feasibility study, will provide the City with enough information to enable City leadership to make a decision on whether the utility or tax funding alternative is the best fit for the City's sewer and stormwater program goals. If the City decides to move forward with utility implementation, Raftelis has developed an implementation plan to serve as a draft operational roadmap for that phase of the project. The components of the implementation plan are described in detail below.

6.1. Pre-Implementation Phase

6.1.1. Cost Allocation Methodology Refinement

During the utility feasibility study, Raftelis proposed three different cost allocation methodologies to distinguish stormwater program costs from sewer costs. These methodologies were based on the best available data during the course of that study. The City selected one of these methodologies as most reflective of the infrastructure physical characteristics and most representative of its approach to system operations.

Because the City is served primarily by a combined sewer system, Raftelis recommends refining the results of this preliminary cost allocation by obtaining more detailed flow data from NBC. The City should consider working with NBC staff to determine whether the necessary dry- and wet-weather flow data exist for the Fields Point plant and how they can be used to determine the City's flow contributions managed regionally by NBC. The City can consider a revision to the current cost allocation methodology based on these new data and apply it to the combined sewer/stormwater costs. This analysis could result in a refined and more accurate understanding of stormwater and sewer program costs and fee revenue requirements.

6.1.2. Updated Costs & Level of Service Modeling

The projected 10-year capital and operating costs resulting from the utility feasibility study represent Raftelis' understanding of the City's vision of achieving regulatory compliance, improved flood management and climate justice for its vulnerable populations, along with bringing the stormwater and sewer programs to operational industry standards as quickly as feasible. The City, however, may choose to grow the capacities of both programs at a slower pace. Additionally, the City may consider adding staff time and resource allocations spent on stormwater and/or sewer related work from other City Departments, such as Sustainability, Planning, and Zoning, to sewer and stormwater program costs. Lastly, the City with input from partners like the New England Water Infrastructure Network may consider identifying specific stormwater demonstration projects that could be incorporated into near-terms program costs and help build support for the new utilities.

In this task, the City should determine two additional levels of service (LOS) that may better balance the City's program goals with other objectives, such as affordability and political feasibility. This task will result in 3 total alternative trajectories (low, medium, high) of program growth for the 10-year planning period of FY 2026 – FY 2035. These additional LOS should be incorporated into the financial model for both O&M and CIP and determine each alternative's impacts on estimated rates. The City PM team should select the alternative that would best meet the City's pre-implementation objectives.

6.1.3. Program Delivery Planning

Once the desired level of service and associated changes in the capital and operating budgets are determined in Task 3, the City should focus on near-term planning for executing and delivering the capital projects and operating budget needs. Understanding the capital and operating budgets for the level of service is the first critical step. Actually implementing those operational changes and projects, including any desired near-term demonstration projects identified by the City, to spend the projected annual budgets requires careful consideration of processes, procedures, project management tools, existing staffing workload and assignments, and the need for any additional staff in the short and long term.

It is recommended that the City develop an execution plan for the identified projects and operations. As part of this plan development, the City should review its current project management processes and procedures, management tools and staffing compared to utility best practices and consider the necessary improvements to meet the selected level of service and to execute the associated capital and operating budgets. This review will result in more granular and realistic estimates for project execution and will allow the City to raise only the revenue needed for realistic project delivery and cash flow spending. This task is especially important if the City is considering paying for capital projects through revenue bonds and will allow the City to avoid taking on any unnecessary debt.

6.1.4. Stormwater / Sewer Rate Structure Refinement and Customer Impacts

During the feasibility study, Raftelis proposed that all residential (1-5 unit) properties would be charged a flat residential rate per ERU for stormwater. During the pre-implementation phase, the City would like to explore the impact of residential tiers on customers and overall program revenues. The City should perform a residential tiering analysis by digitizing an additional sample of residential properties of 200, increasing the sample size from 400 to 600. This step will be followed by a regression analysis based on various property characteristics to determine data points that could allow the City to assign residential properties to specific tiers without incurring the effort or cost of digitizing all residential properties in the City.

The City also expressed an interest in expanding the list of customers of interest to demonstrate customer impacts. This list will revise and augment the customer types analyzed during the feasibility phase. The City should consider the impacts of the stormwater rate structure on these customers of interest

During the feasibility study, Raftelis proposed that approximately 10% of sewer program costs be recovered through a fixed charge and the remaining 90% be recovered through a volumetric charge. During the pre-implementation phase, the City will review the impacts of alternative allocations between fixed and volumetric charges on customers of interest identified by the City and confirm or revise the 10%/90% split that was proposed during the feasibility study.

6.1.5. Consideration of City and State Properties

The City expressed an interest in reviewing how the inclusion of City and State properties in stormwater and sewer billing impact estimated rates. During the feasibility study, Raftelis assumed that the City would bill City properties for stormwater and sewer, similarly to how the City is billed by water and sewer treatment services by Providence Water and NBC. Raftelis also assumed that the City would bill State properties for sewer service but not for stormwater, though it should be noted that the estimate of total ERUs for the City didn't yet include any exemptions such as for State properties. During the pre-implementation phase, the City will identify State- and City-owned properties, analyze the effects of excluding or including these properties on the estimated units of service, and consider the resulting impacts on both stormwater and sewer rates.

6.1.6. Administrative Framework Determination

During the feasibility study, Raftelis started discussions with the City regarding the potential administrative framework for the new stormwater and sewer utilities. During the pre-implementation phase, the City will work on firming up decisions that would impact costs of both utility implementation and ongoing administration. These decisions include:

1. **Billing method** – In this task, the City will work toward making the decision on whether the new utilities would be billed directly by the City or by a third-party biller, such as Providence Water or NBC. This is a key decision that will greatly influence both utility implementation plans and ongoing administrative costs, which will need to be incorporated into rate revenue requirements. The City will likely hold discussions with Providence Water and/or NBC with regard to billing policies, customer service, potential influence of the PUC process, technical requirements, and other factors. The City will also work with Providence Water to estimate costs related to data sharing of customers' monthly water consumption that would serve as basis for sewer billing by the City. Additional industry research may be required to support the City's internal and external discussions and understand any necessary statutory changes to allow this approach.
2. **Billing policy outline** – In this task, the City will work toward key decisions on billing policies for the new utilities. These may include discussions on "stormwater only" (SWO) billing, aggregation of parcels for billing purposes, bill disputes, and other topics. The City would like to include a focus on fee transparency (e.g., customer-facing fee viewer). Decisions made during this task will be used to update the utility implementation plan. Note that this task will need to be performed after the decision on the billing method is made and will result in a high-level outline of billing policies that will guide their full development during the implementation phase.
3. **Billing data maintenance** – In this task, the City will envision how data will be maintained to support accurate billing after utility implementation. Topics to be covered include impervious area data maintenance to support stormwater billing, potential technical process for intake of Providence Water monthly water consumption data and using them to create sewer bills, updating data in response to customer bill disputes, and related topics. As part of this task, the City will consider its internal capacity for handling these processes using business flows compared to the need for creating or acquiring a software tool to administer some of these processes. As an alternative, the City will also refine the scope and associated costs for potential outsourcing of all these tasks in planning for implementation.

6.1.7. Equity Solutions

During the feasibility study, the City indicated that it would be interested in promoting fairness and equity among the future stormwater and sewer rate payers through the creation of these new utilities. Sewer and stormwater fees will be a more fair funding source than property taxes since they will be based on each

customer's usage of the City's sewer and stormwater collection systems, as they relate to water usage and property impervious area, respectively. Additionally, the City would like to create a Stormwater Fee Credit Program that would allow customers to receive bill reductions for decreasing their demand for stormwater service. As part of the pre-implementation phase, the City will create an outline of the stormwater credit program and research stormwater credit programs at peer cities in the Eastern United States as reference for the credit program design.

The City is also interested in supporting its most vulnerable stormwater and sewer customers through a Customer Assistance Program (CAP). During the feasibility phase, Raftelis assumed that customer participation in a CAP would reduce rate revenues by approximately 1% annually, with this difference needing to be made up from other rate payers, taxpayers, or miscellaneous revenues. As part of the pre-implementation phase, the City will work to design the stormwater and sewer rate-funded CAP at a detailed level. Questions to be addressed include policy (such as customer eligibility), financial (such as level(s) of discounts and projected participation over the 10-year planning period), and administrative (such as tracking customer CAP participation and administration of the program). Decisions about CAP program design would likely impact sewer and stormwater program revenue requirements and rates and may require updates to the financial model.

6.1.8. Public Outreach and Engagement

Public engagement and outreach will be a key component of promoting understanding and buy-in regarding the new utilities from City elected officials, key community members, and the public at large. Whatever the decision, people are more inclined to support it, even if they don't fully like it, if they have had a chance to weigh in. By that same token, people will often reject decisions they had no input to, even if those decisions benefit them. The subtasks below are recommended in the lead-up to formal decision on the implementation of new utilities to fund the stormwater and sewer programs.

6.1.8.1. Team Workshop for Stakeholder Identification and Engagement Process

The City should hold a three-hour in-person workshop to deeply explore the City's current communications approach, assets, roadblocks, opportunities to seize, and external threats to manage. The City may leverage previous work done for stakeholder mapping for the Task Force process and explore additional groups of stakeholders who will be impacted by this decision differently, such as large institutional and private land owners. The project team will also discuss the City's expectations, preferences, and success indicators for the outreach and engagement process. During the workshop, the team should assess the City's internal capacity for carrying out a robust engagement strategy, identify gaps that may exist, and discuss potential public engagement and outreach roles for partners and consultants. Exploring these topics with the City team is an essential step in the development of the engagement plan.

6.1.8.2. Influencer Interviews

The City should interview by phone additional key influencers in the community identified during the team workshop. Each interview would be approximately 45-60 minutes and explore their understanding of the stormwater and sewer system and costs, the drivers for creating a funding source, and their values and opinions about what's fair and appropriate. The project team can also ask about key groups to meet with as the process progresses.

6.1.8.3. Communication & Engagement Plan

The City should develop a communications and engagement plan based on the results of the workshop and influencer interviews. The plan may also reference communication and engagement activities undertaken by

other communities in New England who recently successfully implemented or attempted stormwater utility implementation. As an input into the plan, the City would also like to complete a public survey to get feedback on messaging about the potential new fees and test future customers' willingness to pay. The plan will include a prioritized list of stakeholders and the channels that the City will use to reach them, a message platform for use in all materials, and a list of groups or people to meet with, as well as a preliminary implementation schedule. The plan may also include engagement with members of the City Council. Overall, the plan should what tasks the City would plan to complete for communications and engagement leading up to future decision point(s) by the City Council.

6.1.8.4. Engagement Techniques

The City should develop engagement techniques that correspond to the requirements set out in the communication and engagement plan. These techniques may include but are not limited to:

1. Presentations to City Council committees
2. Presentations and listening sessions at City ward meetings with City Councilors
3. Presentations and listening sessions at planned public engagement events conducted by community groups and non-governmental organizations
4. Meetings with neighborhood associations and industry groups
5. Individual engagements with large institutional and commercial landowners
6. Open house events (in-person and virtual) for the general public
7. City website updates, including the development of FAQs
8. Social media engagement plan and schedule
9. Traditional media engagement plan and schedule
10. Short video explaining the drivers for the new fees
11. Direct mailings like postcards or property tax "bill stuffers"
12. Education of Providence 311 staff regarding the potential new fees

6.1.8.5. Communication Materials

The project team should create communication materials to support the goals of the communication and engagement plan and enable the successful delivery of the engagement techniques identified by this plan. These materials may include printed media (postcards or bill stuffers), social media posts, fact sheets, website copy including FAQs, infographics explaining stormwater and sewer billing concepts, short animated video, etc. Depending on the materials, the City may engage a partner organization or consultant to create these materials.

6.1.9. Parcel Data Assessment

During previous discussion with Raftelis, the City expressed concerns about the accuracy of existing parcel data. According to the City, some of the parcel data may not cleanly line up with aerial imagery, which introduces potential errors with impervious area measurements that are used to create stormwater fees for each parcel. During the pre-implementation phase, the City should conduct a quality assessment of City parcel data to determine the severity of any potential parcel data issues. In addition to identifying issues with the parcel data, the assessment will document the workload that would be required to resolve any identified impervious area-based billing issues either through parcel layer updates or billing policy development.

6.1.10. Leadership Exchange

The City has expressed an interest in a leadership exchange workshop between City and Boston Water and Sewer Commission on the subject of the stormwater utility implementation. The City should outline the goals

of this engagement prior to the conversation between the City and BWSC leadership teams. The City desires for this conversation to be facilitated to maximize the benefits to both parties.

6.1.11. Implementation Decision

At the completion of other tasks in the pre-implementation scope, the Providence Mayor and City Council are likely to have the information needed to make an informed decision on whether to implement stormwater and sewer utilities as proposed. The City should prepare for this decision by revising the draft utility implementation plan presented in the feasibility study using the findings of this pre-implementation phase. The City should create a draft implementation schedule that reflects the demands of the City's general administrative schedule and processes. The revised program details, rates, and implementation plan will be presented by staff to the Mayor and City Council for their consideration.

6.2. Implementation Phase

6.2.1. Public Outreach & Engagement Plan

Ensuring stakeholder and public buy-in is a major part of a successful fee implementation. During the implementation phase, the City will build on the results of public engagement and outreach performed during the pre-implementation phase to develop an outreach and engagement plan to promote public understanding and support for the new utilities. This plan would likely include in-person engagement events, such as open houses and listening sessions with community groups, as well as a communication plan that leverages both traditional and social media.

In addition to providing education and soliciting feedback via in-person meetings and active engagement, the City could consider more passive communication methods that would be available to future customers at their convenience. These methods would include updates to the City website detailing the utility implementation background and process. Another component could be communicating draft property-specific fees via a **customer-facing online fee viewer**. An example of this fee viewer tool is the one implemented by BWSC during their stormwater charge implementation. It allows customers to view their parcel imagery, delineated impervious area, and resulting stormwater charges, as seen in Figure 12 below. Draft sewer charges could also be included in this tool if the City desires. Such online tools have proven to be an effective fee communication method with future customers as they provide property-specific information, reduce customers' anxiety about the new fee, and reduce customer support needed in the lead-up and following utility implementation. It is recommended that the City deploy the online fee viewer after impervious area data that support the stormwater fee are fully developed, as described below.

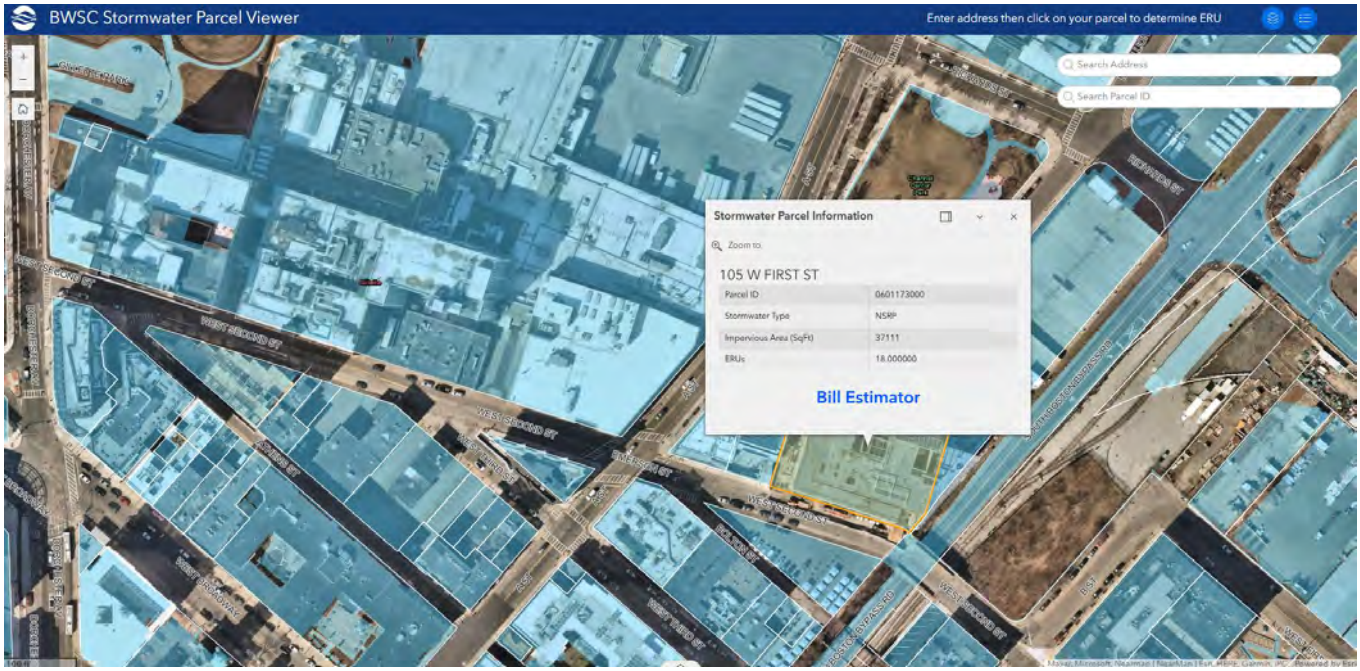

Figure 12. BWSC Stormwater Parcel Viewer Tool

6.2.2. Suggested Legislative Changes

Current State of Rhode Island legislation enables municipalities to charge stormwater and sewer fees, each under different state statutes (Title 45, Chapters 14 and 61).[18,19] Chapter 14 authorizing sewer fees provides the City with the authority to lien properties as a payment enforcement mechanism for delinquent sewer payments. However, Chapter 61 that covers stormwater fees does not mention giving municipalities the authority to issue liens for delinquent stormwater fee payments. The City can consider working with its legal counsel in drafting a request to the state legislature to update the stormwater regulations to allow municipalities to utilize liens as a payment enforcement mechanism to encourage higher collection rates for stormwater fees. Any partnership with an existing regional utility may also require state legislative changes.

6.2.3. Sewer and Stormwater Utility Ordinances

The City will need to create a new ordinance to enable each of the new sewer and stormwater utilities. The draft ordinances would include necessary details for the fee implementation, such as rate structure details, billing approach, payment enforcement mechanisms, bill dispute process, and stormwater credits. Any amendments to the enabling legislation at the state level would impact the potential components of the ordinance. Additionally, changes to the City code should address the creation of the Customer Assistance Program (CAP), which is discussed below.

6.2.4. Finalized Customer Assistance Program

During the implementation phase, the City will build on the work done during pre-implementation and finalize the details of the proposed CAP. The City should plan to address all aspects of CAP administration,

[18] Rhode Island General Laws § 45-14-1, accessed 12/23/24. http://webserver.rilin.state.ri.us/Statutes/title45/45-14/45-14-1.htm

[19] Rhode Island General Laws § 45-61-4, accessed 12/23/24. http://webserver.rilin.state.ri.us/Statutes/title45/45-61/45-61-4.htm

such as drafting customer-facing communication about eligibility policies and application process; documenting internal policies and processes for intake, recertification, and handling complaints; technical integration with utility billing; and other topics as identified during the pre-implementation phase.

6.2.5. Data Exchange with Providence Water

If implemented as recommended, sewer billing will be based on water usage data provided by Providence Water. The City will need to establish a reliable mechanism for regularly obtaining a full set of billing data for Providence Water customers within the City to be used as an input for generating sewer bills. This work will build on discussions during the pre-implementation phase and will likely result in a contract or a Memorandum of Understanding between Providence Water and the City that details the service level agreement, technical details for data exchange, and the process for addressing customer complaints and/or bill disputes. Any ongoing costs associated with this data exchange should be incorporated into the financial model as part of ongoing sewer utility administration costs.

6.2.6. Impervious Area Data Development

Since impervious area is recommended as the basis for the stormwater fee, it is critical for the City to have thorough impervious area data development procedures in place. During the implementation phase, the City will develop impervious area data for all non-residential properties in the City, which will result in accurate stormwater bill estimates for all non-residential properties. The resultant GIS layer can be used in the **customer-facing online fee viewer** described above as well as the basis for initial billing. Figure 13 to the right is an example of a non-residential parcel that has its impervious area captured in light blue.

Figure 13. Example of non-residential property with captured impervious area (in light blue)

The City will also make decisions regarding ongoing impervious area data maintenance following implementation of the stormwater fee. This discussion will cover topics such as the frequency of updates, data to support updates (aerial imagery, certificates of occupancy, customer feedback via bill disputes, etc.), staffing, business process flows, and any other topics that are necessary to ensuring proper data maintenance policies and procedures are put in place along with the new fees.

6.2.7. Finalized Near-Term Program Needs

During the implementation phase, the City should plan on a close collaboration between DPW, Finance, and other City departments identified during the pre-implementation phase to finalize the near-term program needs and associated costs for both sewer and stormwater programs. This exercise will include any revisions to the near-term operational budget and CIP. Discussions will be needed to finalize staffing plans and overall resource needs both for the sewer and stormwater programs as well as for utility and CAP administration. This task will build on similar budget and administrative framework discussions from the feasibility and pre-implementation phases and will result in final near-term program costs and rate revenue requirements.

6.2.8. Finalized Sewer and Stormwater Rate Structure and Rates

During the implementation phase, the City should build on the work done during the pre-implementation phase to finalize the residential rate structure for the stormwater fee and the allocation between fixed and

volumetric components of the sewer fee. The final decision on the rate structure will be included in the ordinance language that establishes the two utilities, which is discussed above. It is not recommended that final rates are included in the ordinances as they are expected to change as program needs grow in the near term. However, this task should produce final rates that will be used for creating bills for individual properties, as described below.

6.2.9. Parcel Data Update

During the implementation phase, the City will implement any parcel data updates resulting from the assessment performed during the pre-implementation phase. Some concerns that emerge may be addressed through specific billing policies, such as aggregations of parcels that share an owner. The City will need to carefully weigh the effort needed for parcel layer updates compared to other considerations, such as potential impacts of aggregated billing on collections.

6.2.10. Bill Creation and Fee Collections

During the implementation phase, the City will build on the administrative framework decisions about the billing method, billing policies, and billing data maintenance to create a business processes and/or tool for generating customer fees. Even if the City selects a third-party biller, such as Providence Water or NBC, to administer the billing and collections process, the responsibility for accurately calculating sewer and stormwater bills for each property would still rest with the City (or a contractor selected by the City if these functions are outsourced). At the minimum, the City will need to develop a method or tool for creating a bill file that shows each property's sewer and stormwater fees based on the latest water usage and impervious area information, respectively, and that reflects any past bill disputes, stormwater credits, and discounts due to participation in CAP. If the City does not select a third-party biller and decides to administer the utility internally instead, it will also need to develop billing, customer service, and collections policies and procedures as well as hire and train staff to support utility operations prior to utility "go-live."

One method for the City to pursue is to develop a software tool to support accurate sewer and stormwater bill creation for utility implementation and beyond. This tool would allow intake of parcel and property data, impervious area data, and Providence Water billing data and apply the rate structures selected by the City to calculate sewer and stormwater bills for each property. It would manage account information to allow the City to keep track of stormwater credits, past billing disputes and data corrections resulting from them, and discounts that result from successful CAP participation. The tool would output a bill file that would be used by the billing entity to create customer bills. If the City chooses to implement stand-alone billing, as opposed to using a third-party biller or creating a new page for the tax bill, this new tool could also generate individual bills and output them as print-ready PDFs for transmission to the bill printing and mailing service. Lastly, this tool could have reporting capabilities to support utility administration and reconciliation with the City's financial system. This software tool could be similar in nature to custom systems used by other utilities, such as BWSC. Figure 14 below shows an example of an account information page with parcel data in the system that was developed for BWSC.

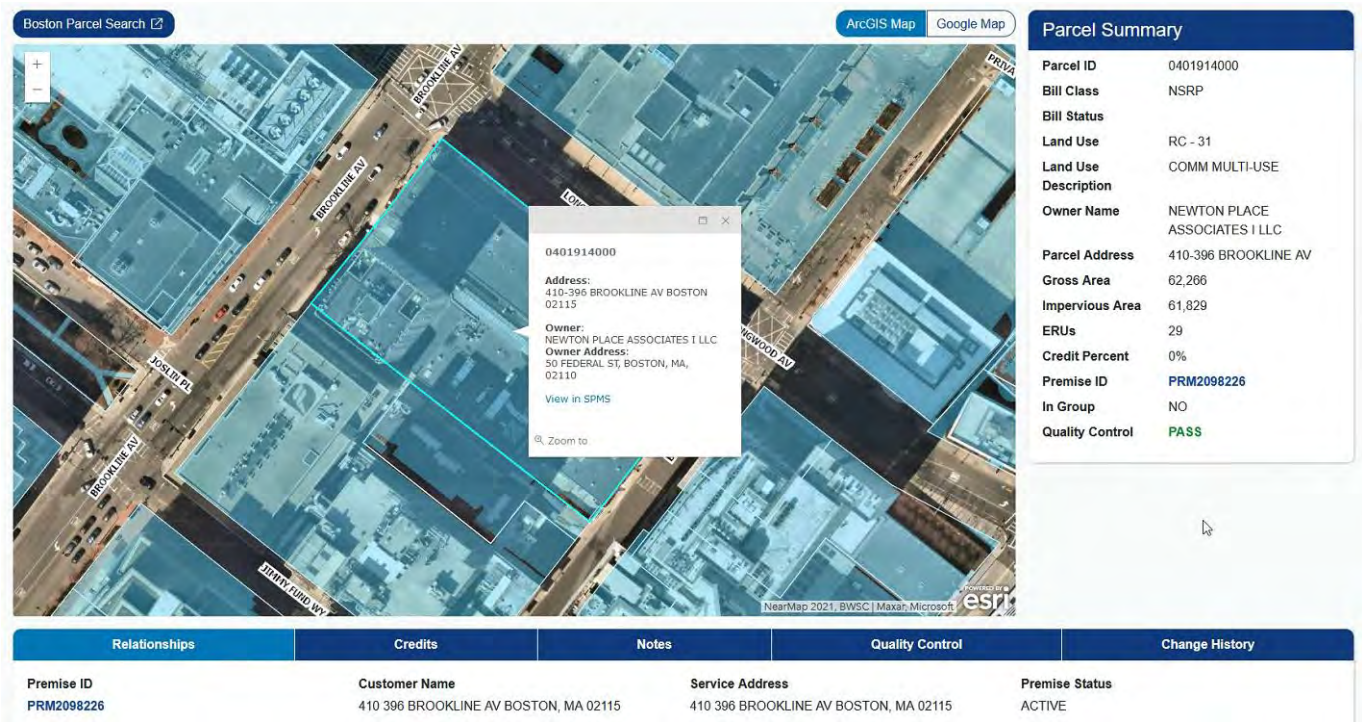

Figure 14. BWSC Billing System Parcel Summary Screen

6.2.11. OPTIONAL: Program Delivery Planning

The City should consider undertaking program delivery planning during the implementation phase if this task isn't executed during the pre-implementation phase (see above). The delivery planning process will assist the City with realistically estimating its capacity and resources, even with extra funds coming in from the new fees, to deliver the expanding sewer and stormwater programs. It will result in a prioritized operational plan that may help reduce program costs in the near term and not over-commit City resources or place undue burden on utility customers.

Appendix A: 10-Year CIP Costs

This appendix details the proposed capital projects for the sewer and stormwater programs over a 10-year period and their estimated costs, escalated for inflation. The table is divided into three categories (General CIP, Flood Mitigation, and Contingency) and includes the description of each project as well as any assumptions that were made about the projected costs over the next 10 years. Assumptions include proposed timelines for projects, estimates for the project costs, relevant project details, and pertinent data about the sewer and stormwater systems. Costs were originally estimated in FY 2025 dollars and escalated at 4% annually for inflation. Because approximately 68% of the City's area is served by a combined sewer and stormwater system, it is important to note that some of these projects relate to both sewer and stormwater programs. The table below shows total costs before they were allocated between the two programs. The split of the costs between the two programs for each of the three categories is summarized in Table 4 in the report.

10-Year Escalated CIP Costs

ID	Project	Description	Assumptions	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035
			General CIP										
6	TMDL Implementation Plan	----	----	$300,000	$-	$-	$-	$-	$-	$-	$-	$-	$-
10	Sanitary/Combined system CCTV & cleaning	Annual CCTV condition assessment & cleaning program of prioritized areas of the sanitary and combined sewer systems.	1,146,626 LF combined + 628,194 LF sanitary = 1,774,820 LF. 120,000 LF has been inspected to-date. Remaining to be inspected = 1,654,820 LF. Use $6/LF assuming an outside contractor, including cleaning and CCTV inspection. Set goal to complete inspection over the next 10 years consistent with CMOM best practices; equals 165,482 LF per year. Total annual cost = 165,482 LF x $6/LF = $992,892 per year. Round to $993,00 per year. Assume a ramp-up period of 4 years. This cost assumes using an outside contractor and may reduce over time as the in-house CCTV crews ramp up. Assume start in FY27 after Jan 2027 utility implementation.	$-	$268,507	$558,495	$871,252	$1,208,136	$1,256,462	$1,306,720	$1,358,989	$1,413,349	$1,469,883
11	Storm system CCTV & cleaning	Annual CCTV condition assessment & cleaning program of prioritized areas of the storm sewer system.	Total system length = 608,931 LF. Our understanding is that none has been inspected to date. Use $6/LF assuming an outside contractor, including cleaning and CCTV inspection. Set goal to complete inspection over the next 7 years consistent with utility best practices; equals 86,990 LF per year. Total annual cost = 86,990 LF x $6/LF = $522,000 per year. Assume a ramp-up period of 3 years. Year 1 = $174,000; Year 2 = $348,000 LF; Year 3 = $522,000. This cost assumes using an outside contractor and may reduce over time as the in-house CCTV crews ramp up. Assume start in FY27 after Jan 2027 utility implementation.		$188,198	$391,453	$610,666	$635,093	$660,497	$686,916	$714,393		
12	Annual Combined/Sanitary Sewer Line Renewal & Replacement Program	Annual renewal/replacement program for the sanitary and combined sewer systems based on the CCTV condition assessment data being collected annually. Highest risk sewers selected for annual renewal using a combination of open cut replacement/point repairs and CIPP lining.	1,146,626 LF combined + 628,194 LF sanitary = 1,774,820 LF; 1% renewal rate based on total length per utility best practice; PVD is currently doing R&R program that includes about 600 LF of open-cut replacement and 30,000 LF of CIPP; total = 30,600 LF or 1.7% per year based on total length. Total cost of annual work is $4.08M, incl. unit cost of $2433/LF for open-cut replacement and $92/LF for CIPP. This budget cost assumes the same ratio of open-cut to CIPP per year based on 1% per year renewal rate. Budget assumes 17,800 LF will be renewed/replaced annually, 600 of which will be open-cut replacement and 17,200 LF of CIPP. Total equals 600 LF * $2433 per LF = $1,459,800; plus 17,200 LF * $92 per LF = $1,582,400; grand total of $3,042,200 per year. Round to $3,100,000 per year. Assume start in FY28 after Jan 2027 utility implementation and ramp up over 4 years.	$-	$-	$871,770	$1,813,281	$2,828,718	$3,922,489	$4,079389	$4,242,564	$4,412,267	$4,588,757
13	Annual Storm Sewer Line Renewal & Replacement Program	422,164 LF; 186,767 enters combined system; Total = 608,931 LF	Total system length = 608,931 LF. Utility best practice is to renew/replace the system at 1% rate by length per year prioritized based on Business Risk Exposure scores. 1% = 6,089 LF per year. Storm system R/R can be both open-cut and CIPP lining similar to the sanitary system. Assume 2/3 is open cut (4,059 LF) at an average cost of $1,000/LF and 1/3 (2,030 LF) is CIPP lining at $100/LF. Ramp up over 7 years starting in FY29. Target annual cost to ramp to = 4,059 LF x $1,000/LF + 2,030 LF x $100/LF = $4,262,000 LF.	$-	$-	$-	$712,277	$1,481,536	$2,311,196	$3,204,858	$4,166,315	$5,199,561	$6,308,801
14	Annual Combined/Sanitary Sewer Manhole Renewal/Replacement Program	Future cost 9,865 combined, 5,209 sanitary; Total = 15,074	Total 15,704 manholes. Best practices include assessing manhole condition when the sewer lines are inspected. And renewing/replacing or eliminating I/I sources in manholes at a rate of 1% - 2% per year prioritized based on type of defects and	$-	$-	$-	$-	$382,029	$794,620	$1,239,608	$1,289,192	$1,340,760	$1,394,390

10-Year Escalated CIP Costs

ID	Project	Description	Assumptions	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035
15	Annual Stormwater Sewer Manhole Renewal/Replacement Program	Future cost 3,555; 573 enter combined system	risk scores. Ramp up over 3 years. Start in Yr 3. Use $6,000/manhole for blended cost. Grade adjustments for repaving is budgeted in the highway budget so not included here. Assume 1% per year (157 MHs). Total cost = 157 x $6,000 = $942,000. Year 1 = $314,000; Year 2 = $628,000; Year 3 = $942,000. Assume start in FY30 after Jan 2027 utility implementation. Total 3,555 manholes. Best practices include assessing manhole condition when the sewer lines are inspected. And renewing/replacing or eliminating I/I sources in manholes if they are deteriorating the MHs at a rate of 1% - 2% per year prioritized based on type of defects and risk scores. Ramp up over 3 years. Start in Yr 3. Use $6,000/manhole for blended cost. Grade adjustments for repaving is budgeted in the highway budget so not included here. Assume 1% per year (36 MHs). Total cost = 36 x $6,000 = $216,000. Year 1 = $72,000; Year 2 = $144,000; Year 3 = $216,000. Assume start in FY30 after Jan 2027 utility implementation.	$-	$-	$-	$-	$87,599	$182,206	$284,241	$295,611	$307,435	$319,733
16	Annual Stormwater Catch Basin Renewal/Replacement Program	Future cost 6,585 combined; 6,308 storm; 695 enter combined system	Total 12,893 catch basins (CBs). Best practices include assessing catch basin condition when the drain lines from the CBs to the sewers are inspected or when CBs are cleaned. Most of the CBs have sumps for sediment/trash capture. $5,000 per CBB includes funding for performing these inspections and a blended cost for repairs/replacements. Assume a 0.05% renewal rate (64 CBs) per year until more condition assessment data is collected and CBs can be prioritized based on type of defects and risk scores. Ramp up over 3 years. Total cost = 64 x $5,000 = $320,000. Year 1 = $106,700; Year 2 = $213,400; Year 3 = $320,000. Assume start in FY30 after Jan 2027 utility implementation.	$-	$-	$-	$-	$129,817	$270,019	$421,098	$437,942	$455,460	$473,678
17	Capital Cove pump station	Capital Cove pump station revitalization	Assume Engineering assessment in Year 1 to confirm condition of assets, do pump drawdown, and recommend improvements with cost estimate. Year 1: Use $50,000 for assessment cost. Years 2 & 3: Budget $100,000 each year for implementing recommended improvements from Engineering assessment. Assume start in FY33. Craig: Capital Cover pump station revitalization, generator issues (replace in the next 5 years), pump replacement soon (smaller pump, submersible, maybe 40 years old), may need to move it (adjacent to river underground) - build in feasibility study. Serves a small population, not particularly flood prone yet. Installed in 1990 including generator.	$-	$-	$-	$-	$-	$-	$-	$68,428	$142,331	$148,024
18	Sewer sluice gates	Sewer sluice gates incidental to hurricane barrier	Assume 3 gate operators and motors are replaced in FY34. Remaining 4 replaced in FY35. Budget $100k for each operator and motor replacement including equipment and installation. Craig: Sewer sluice gates incidental to hurricane barrier - will want to replace operators and motors toward Yr8; 5 total locations with 7 total gates, replace 3 operators and motors.	$-	$-	$-	$-	$-	$-	$-	$-	$426,994	$592,098
19	Flow and rainfall monitoring program for MS4 system	Installation of flow monitors and rain gauges in storm system to characterize flows for use in hydraulic model development and capacity/pollution reduction studies.	$1,500 per flow monitor per month, for 12 months, assume ~25 meters per watershed per year; inputs into stormwater system capacity & pollution reduction studies. Assume 1 watershed being studied per year, with 6 watersheds total: 4 TMDL watersheds and 2 watersheds that may be outside of TMDL requirements. Pick watershed based on reg reqs, install rain gauges and flow monitors. Total = $1,500 x 12 months x 25 meters = $450,000. Assume start in FY27 after Jan 2027 utility implementation.	$-	$486,720	$506,189	$526,436	$547,494	$569,394	$592,169	$-	$-	$-
20	Flow and rainfall monitoring program for combined/sanitary system	Installation of flow monitors and rain gauges in sanitary/combined system to characterize flows for use in hydraulic model development and capacity constrained area evaluations	$1,500 per flow monitor per month, for 12 months, assume ~25 meters per sewershed per year; inputs into combined/sanitary system capacity studies. Assume 1 sewershed being studied per year, assume 4 sewershed. Pick sewershed based on reg reqs, install rain gauges and flow monitors. Total = $1,500 x 12 months x 25 meters = $450,000. Assume start in FY28 after Jan 2027 utility implementation.	$-	$-	$506,189	$526,436	$547,494	$569,394	$-	$-	$-	$-
21	Combined/Sanitary Sewershed/Master Planning	Sewershed planning studies and flood reduction evaluations: hydraulic modeling, integrated planning, alternatives analysis and selection, planning level costs development	Ramping up budgeted costs to perform evaluations and aligned with flow monitoring budget above. Assume planning studies will start after flow and rainfall monitoring for a specific sewershed is completed in previous year. Assume 4 sewersheds. Driven by CMOM requirements with regulators, supported by flow data and hydraulic models.	$-	$-	$-	$467,943	$608,326	$632,660	$394,780	$-	$-	$-

10-Year Escalated CIP Costs

ID	Project	Description	Assumptions	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035
22	Stormwater Program (MS4) Watershed/Master Planning	Watershed planning studies and flood reduction evaluations: hydraulic modeling, IWM plans, alternatives analysis and selection, planning level costs development. Includes GSI assessment.	Ramping up budgeted costs to perform evaluations and aligned with flow monitoring budget above. Assume planning studies will start after flow and rainfall monitoring for a specific watershed is completed in previous year. Assume 6 watershed. Driven by MS4 & TMDL requirements with regulators, supported by flow data and hydraulic models.	$-	$-	$-	$-	$486,661	$632,660	$657,966	$684,285	$711,656	$444,073
23	TMDL GSI project implementation for 4 watersheds	Assumed implementation schedule of GSI projects identified by VHB in 2024	Provided costs escalated by additional 35% per VHB guidance. Assume that TMDL Priority Outfalls on City land will be implemented first, followed by easy to construct City projects, then medium, then hard, and then projects on other/private land will be implemented last. Assume this project is planned and its start won't be affected by utility implementation date.	$444,366	$448,999	$684,873	$656,203	$600,327	$623,486	$890,919	$1,049,111	$896,046	$819,981
24	TMDL gray project implementation	Allowance for gray infrastructure projects identified in the watershed studies	Developing a cost for this line item is difficult given the watershed studies are ongoing. Using a placeholder of $250,000 per year starting in FY30 until projects are identified from the studies.	$-	$-	$-	$-	$304,163	$316,330	$328,983	$342,142	$355,828	$370,061
25	York Pond Watershed Project	$150,000 City match to received grant	$300k grant for riparian flooding mitigation, plus $150K match by City	$100,000	$-	$-	$-	$-	$-	$-	$-	$-	$-
26	Water quality GSI projects from future watershed planning studies	Will be identified during Stormwater Program (MS4) Watershed/Master Planning	Assume ramping up starting in FY332 to 3 additional projects per year by FY35 at average cost from VHB's TMDL GSI cost projections. Per Craig, increase cost per project to 150% of current avg project cost.	$-	$-	$-	$-	$-	$-	$326,590	$339,654	$706,480	$1,102,108
27	GSI grants to private properties	Support for private property owners to install GSI to achieve City's TMDL goals; may include depaving grants	Assume that City will desire to privide incentives for private property owners to install GSI. Ramp up over time starting in FY30 after Jan 2027 utility implementation.	$-	$-	$-	$-	$60,833	$63,266	$98,695	$102,643	$142,331	$148,024
28	Depaving program projects	Additional depaving projects to those identified for TMDL BMPs	Assume costs of $20/SF for removal, soil/grass backfill, other plantings, and curbing. Assume 15K SF removed per year starting in FY32. Public side depaving, maybe schoolyards	$-	$-	$-	$-	$-	$-	$394,780	$410,571	$426,994	$444,073
29	Land acquisition costs resulting from future watershed planning studies	Annual allowance cost. To be refined as Stormwater Program (MS4) Watershed/Master Planning and Sanitary/Combined Sewer Program Master Planning	Currently not considering private property installations but may in future years. Most likely will be used to acquire private land for water quality GSI installation.	$-	$-	$-	$-	$-	$-	$-	$684,285	$1,423,312	$1,480,244
30	Vehicles & Equipment Needs	Additional vehicles to support expanding in-house operations. Sum of items 30a-30f below.	Assume start in FY28 after Jan 2027 utility implementation. Per David M: Planning to purchase more vehicles; currently purchasing vac truck, $374k; will have 2 vac trucks, 2 clam shells - but will need to replace one or both clam shell trucks within the next couple of years. Plan for CCTV truck to support in-house crew starting in FY26-27, have camera.	$-	$-	$-	$-	$760,408	$1,155,820	$1,328,585	$394,780	$957,998	$1,423,312	$444,073
30a	CCTV Truck	Will support in-house CCTV crew #1, 2 & 3	City's existing CCTV camera can be used as backup. Assume purchases in FY29, FY31, and FY34.	$-	$-	$-	$-	$409,450	$-	$442,862	$-	$-	$498,159	$-
30a	Vactor Truck	Replacement truck #2 and new vactor truck #3	Recommending vactor truck instead of replacement clam shell digger in FY31; new truck #3 to align with crew in FY33. Per Craig: If needed a clamshell could be purchased in place of the vactor with this "placeholder."	$-	$-	$-	$-	$-	$506,128	$-	$547,428	$-	$-
30b	Pickup Truck	Will support in-house dig-up crew #1 & 2	Assume crews start in FY30 and FY34. Using industry standard costs.	$-	$-	$-	$-	$60,833	$-	$-	$-	$71,166	$-
30c	Excavator	Will support in-house dig-up crew #1 & 2	Assume crews start in FY30 and FY34. Using industry standard costs.	$-	$-	$-	$-	$425,829	$-	$-	$-	$498,159	$-
30d	Dump Truck & Trailer	Will support in-house dig-up crew #1 & 2	Assume crews start in FY30 and FY34. Using industry standard costs.	$-	$-	$-	$-	$243,331	$-	$-	$-	$284,662	$-
30e	Trench box, dig-up crew materials	Will support in-house dig-up crew #1 & 2	Assume crews start in FY30 and FY34. Using industry standard costs.	$-	$-	$-	$-	$60,833	$-	$-	$-	$71,166	$-
30f	Street Sweeper trucks	Three replacement trucks and three additional street sweeper trucks to support expanding in-house street sweeping program	Per Craig/head mechanic Steve Dutra, sweeper life is 5-7 years. 2 sweepers are 10 years old. He recommends replacing 1 sweeper in FY27, FY30 and FY32 (first delayed by 2 years due to expected utility implementation in Jan 2027). If there's efficiencies in ordering together, they could be consolidated. Assume new trucks purchased in FY31, FY33, and FY35.	$-	$-	$-	$-	$350,958	$364,996	$379,596	$394,780	$410,571	$-	$444,073
31	Asset Management software assessment & optimization planning	Future cost: Evaluate how the AM software systems, i.e., GIS, CMMS, FIS etc. are currently used compared to best practices and software capabilities;	$100,000 for the assessment starting in Yr1; budget later for software costs based on assessment results. Assume start in FY27 after utility implementation in Jan 2027.	$-	$-	$108,160	$-	$-	$-	$-	$-	$-	$-	$-

10-Year Escalated CIP Costs

ID	Project	Description	Assumptions	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035
		prioritize recommendations for improvements; roadmap/schedule for implementation; result is to determine future costs; enables quick decision making and increased annual R/R.											
32	Asset Management program updates	Assess maturity level of asset management program compared to ISO 55000 industry standards. Develop remaining Business Risk Exposure (BRE) scores from available condition data & consequence of failure data. Develop Next Actions from CCTV data for $-sewer & MH renewal, cleaning or future inspections based on known data and BRE. Determine how best to house of all of the data in a CMMS or equal. Develop processes for determining and entering all CCTV & O&M data for assets into CMMS.	$100k in Yr 1 and $100k in Yr 2. Assume start in FY27 after utility implementation in Jan 2027.	$-	$108,160	$112,486	$-	$-	$-	$-	$-	$-	$-
33	Utility Implementation	PRELIMINARY ESTIMATE for stormwater and sewer utility implementation	For planning purposes, assume that both utilities will be implemented at the same time by one vendor. Assume City will keep program admin in-house and bill on a separate bill but will outsource bill printing, mailing, and payment processing costs. Assume software development for accurate parcel-based billing and customer support. Assume IA development for all NSFR parcels and additional sample for SFR parcels for tiering analysis. Other elements from implementation plan also included.	$388,267	$201,899	$-	$-	$-	$-	$-	$-	$-	$-
	General Capital Total			$1,232,633	$1,854,178	$3,778,249	$7,203,149	$11,442,425	$14,590,041	$15,777,542	$17,638,176	$20,297,930	$21,082,372
			Flood Mitigation										
34	GSI projects resultant from ongoing flood reduction studies (Pleasant Valley, Blackstone Blvd, Woonasquetucket River, West River)	Projects resulting from ongoing flood reduction studies	Sum of items 34a-34c below.	$78,000	$216,320	$224,973	$233,972	$608,326	$1,012,255	$789,559	$1,231,712	$1,280,981	$1,332,220
34a	Pleasant Valley Pkwy flood reduction GSI	Minimal GSI projects to supplement channel widening (see below)	Per discussion with Craig, assume $200k annually for 5 years. Assume start in FY27 after utility implementation in Jan 2027.	$-	$216,320	$224,973	$233,972	$243,331	$253,064	$-	$-	$-	$-
34b	Blackstone Blvd GSI project	Resulting from a recent study, per Craig	Per Craig, Blackstone Blvd $75k in FY26 (assume GSI)	$78,000	$-	$-	$-	$-	$-	$-	$-	$-	$-
34c	Woonasquetucket River flood reduction GSI projects		$300k per imperv acre treated assuming first 1" is managed (based on comparable metrics in Phila). However, these costs can increase to multiple $M/year. To be revised based on outcomes of ongoing flood reduction studies. Assume start in FY30 after utility implementation in Jan 2027.	$-	$-	$-	$-	$364,996	$759,191	$789,559	$1,231,712	$1,280,981	$1,332,220
35	Known City-wide flood mitigation gray infrastructure projects	Approximating $40-$50M for known flood mitigation projects in localized flood areas, such as Pleasant Valley Pkwy channel widening/property buy-outs and additional projects in Woonasquetucket watershed, West River watershed, etc.	Start with high end of $50M for planning purposes. Assume starting in FY29 though FY35 with 3-year ramp-up to match ramp-up on Engineering PM. $50M over 7 years is $7.14M per year, 3-year ramp-up starting in FY29 with $2.381M. Total spend FY28-35 is $42.86M. Assume grants will be required to move forward with projects.	$-	$-	$-	$2,785,378	$5,793,585	$9,037,993	$9,399,513	$9,775,493	$10,166,513	$10,573,173
36	Flood reduction GSI projects from future watershed planning studies	Will be identified during Stormwater Program (MS4)	Assume up to 3 additional projects per year. $300k per imperv acre treated assuming first 1" is managed (based on comparable metrics	$-	$-	$-	$-	$364,996	$379,596	$789,559	$821,141	$1,280,981	$1,332,220

10-Year Escalated CIP Costs

ID	Project	Description	Assumptions	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035
		Watershed/Master Planning and Sanitary/Combined Sewer Program Master Planning.	in Phila). However, these costs can increase to multiple $M/year. To be revised based on outcomes of planning studies. - Craig: these projects may be supplemented by Fed funding.										
37	Flood reduction gray infrastructure projects from future watershed planning studies	Will be identified during Stormwater Program (MS4) Watershed/Master Planning and Sanitary/Combined Sewer Program Master Planning.	Developing a cost for this line item is difficult given the watershed studies are ongoing. Using a placeholder of $250,000 per year until projects are identified from the studies.	$-	$-	$-	$-	$304,163	$316,330	$328,983	$342,142	$355,828	$370,061
	Flood Mitigation Total			**$78,000**	**$216,320**	**$224,973**	**$3,019,349**	**$7,071,071**	**$10,746,174**	**$11,307,614**	**$12,170,489**	**$13,084,302**	**$13,607,674**
			Contingency										
	Capital budget contingency	Contingency can include set-asides for emergency projects, unforeseen cost increases, etc. Assume 7% set-aside starting in FY28 after utility implementation in January 2027.	Assume 7% of general CIP and flood mitigation projects starting in FY28 after Jan 2027 utility implementation.	$-	$-	$280,226	$715,575	$1,295,945	$1,773,535	$1,895,961	$2,086,607	$2,336,756	$2,428,303
	Total CIP Costs			**$1,310,633**	**$2,070,498**	**$4,283,448**	**$10,938,073**	**$19,809,441**	**$27,109,750**	**$28,981,117**	**$31,895,271**	**$35,718,988**	**$37,118,349**

Appendix B: Parcels Included in SFR Sample

The following list shows 436 SFR parcels that were randomly selected as a representative sample of the City's SFR properties. Please see Task 4 for additional discussion. The parcels are identified using PROPID field and are listed in ascending numerical order.

001-0052-0000	017-0210-0000	039-0524-0000	048-0967-0000	059-0762-0000	070-0118-0000
004-0139-0000	017-0297-0000	039-0626-0000	049-0011-0000	060-0098-0000	070-0154-0000
005-0057-0000	017-0300-0000	039-0688-0000	049-0287-0000	061-0192-0000	070-0305-0000
005-0069-0000	017-0387-0000	040-0025-0000	049-0314-0000	061-0286-0000	070-0555-0000
005-0159-0000	017-0546-0000	040-0066-0000	049-0430-0000	061-0292-0000	070-0699-0000
005-0199-0000	017-0561-0000	040-0087-0000	049-0440-0000	061-0311-0000	071-0156-0000
005-0293-0000	017-0586-0000	040-0200-0000	051-0202-0000	061-0499-0000	071-0161-0000
005-0424-0000	017-0587-0000	040-0223-0000	052-0053-0000	061-0623-0000	071-0252-0000
005-0471-0000	023-0576-0000	040-0241-0000	052-0073-0000	062-0165-0000	071-0344-0000
005-0538-0000	023-0926-0000	040-0284-0000	052-0090-0000	062-0337-0000	071-0533-0000
006-0153-0000	024-0090-0000	041-0020-0000	052-0126-0000	062-0552-0000	072-0011-0000
006-0241-0000	026-0195-0000	041-0040-0000	052-0176-0000	063-0072-0000	072-0031-0000
006-0333-0000	028-0265-0000	041-0161-0000	052-0256-0000	064-0145-0000	072-0114-0000
006-0373-0000	028-0281-0000	041-0278-0000	052-0302-0000	064-0258-0000	072-0118-0000
006-0508-0000	028-1084-0000	042-0069-0000	052-0338-0000	064-0327-0000	072-0572-0000
006-0552-0000	029-0009-0000	042-0087-0000	052-0421-0000	064-0361-0000	073-0016-0000
006-0553-0000	031-0529-0000	042-0141-0000	052-0441-0000	064-0429-0000	073-0074-0000
007-0061-0000	032-0306-0000	042-0147-0000	052-0469-0000	064-0966-0000	073-0100-0000
007-0104-0000	032-0513-0000	042-0151-0000	052-0542-0000	065-0037-0000	073-0120-0000
007-0306-0000	033-0013-0000	042-0254-0000	053-0290-0000	065-0217-0000	073-0171-0000
007-0359-0000	033-0196-0000	043-0642-0000	053-0446-0000	065-0370-0000	073-0258-0000
008-0236-0000	034-0036-0000	043-0848-0000	053-0499-0000	065-0743-0000	073-0259-0000
008-0458-0000	034-0154-0000	043-0914-0000	053-0599-0000	065-0765-0000	073-0285-0000
009-0022-0000	034-0336-0000	043-1014-0000	053-0636-0000	065-0779-0000	073-0476-0000
009-0150-0000	034-0378-0000	044-0027-0000	054-0002-0000	065-0980-0000	073-0498-0000
009-0168-0000	035-0491-0000	044-0169-0000	054-0367-0000	067-0103-0000	073-0512-0000
009-0270-0000	035-0597-0000	044-0238-0000	054-0690-0000	067-0107-0000	073-0542-0000
010-0555-0000	036-0115-0000	044-0301-0000	058-0292-0000	067-0123-0000	076-0164-0000
011-0033-0000	036-0317-0000	044-0311-0000	058-0315-0000	067-0158-0000	076-0173-0000
012-0280-0000	037-0382-0000	044-0437-0000	059-0065-0000	067-0216-0000	076-0369-0000
013-0164-0000	037-0439-0000	044-0449-0000	059-0085-0000	067-0240-0000	076-0533-0000
014-0028-0000	037-0466-0000	044-0483-0000	059-0226-0000	067-0445-0000	077-0008-0000
014-0123-0000	037-0511-0000	045-0399-0000	059-0297-0000	067-0471-0000	077-0236-0000
014-0241-0000	037-0556-0000	045-0483-0000	059-0298-0000	068-0061-0000	077-0273-0000
014-0463-0000	039-0153-0000	047-0404-0000	059-0526-0000	068-0071-0000	077-0484-0000
015-0196-0000	039-0330-0000	047-0712-0000	059-0614-0000	068-0417-0000	077-0504-0000
016-0261-0000	039-0333-0000	048-0173-0000	059-0673-0000	069-0005-0000	077-0621-0000
016-0418-0000	039-0415-0000	048-0246-0000	059-0697-0000	069-0138-0000	077-0780-0000
017-0184-0000	039-0512-0000	048-0667-0000	059-0699-0000	069-0501-0000	077-0840-0000

078-0207-0000
079-0045-0000
079-0069-0000
079-0104-0000
079-0109-0000
079-0117-0000
079-0124-0000
079-0221-0000
079-0253-0000
079-0568-0000
079-0570-0000
079-0622-0000
080-0027-0000
080-0485-0000
080-0627-0000
080-0628-0000
081-0029-0000
081-0057-0000
081-0075-0000
081-0165-0000
081-0298-0000
081-0386-0000
081-0391-0000
081-0395-0000
082-0007-0000
082-0114-0000
082-0261-0000
083-0099-0000
083-0112-0000
083-0177-0000
083-0198-0000
083-0235-0000
084-0392-0000
084-0454-0000
084-0461-0000
084-0479-0000
085-0054-0000
085-0080-0000
085-0131-0000
085-0393-0000
085-0411-0000
086-0011-0000
086-0088-0000
086-0309-0000
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Appendix C: Stormwater and Sewer Task Force Recommendations Memo

At the launch of this assessment process, Mayor Brett P. Smiley concurrently convened a stakeholder group to review the developing analysis and ensure that it addressed community concerns. The diverse perspectives on the Sustainable Stormwater and Sewer Assessment Study Task Force included residents, environmental justice advocates, affordable housing developers, local businesses, non-profit organizations, Providence City Council members, large institutions and property owners, and representatives of environmental and workforce development organizations.

The Task Force was facilitated by the Narragansett Bay Research Reserve with technical support provided by the SNEP Network. City staff from the Mayor's office, the Department of Public Works, Sustainability Department, Department of Inspections and Standards, the Parks Department, and the Providence Emergency Management Agency all attended and supported the Task Force.

At the conclusion of the 8-month engagement and review process, the Task Force delivered the following memo to Mayor Brett Smiley to summarize the Task Force process, take-aways, and recommendations regarding the City's approach to sustainable and equitable stormwater and sewer funding.

MEMO

To: Mayor Brett P. Smiley
From: City of Providence Sustainable Stormwater and Sewer Assessment Study Task Force
Re: Task Force Recommendations
Date: March 3, 2025

Summary

This memo provides the final recommendations from the City of Providence Sustainable Stormwater and Sewer Assessment Study Task Force. Since your invitation this past spring to form the Task Force, we have completed a rigorous eight-month process to help address critical stormwater and sewer infrastructure needs and improve all of our neighborhoods' resilience to climate change.

We have reviewed the City's existing stormwater and sewer infrastructure management programs and challenges, the legal and enforcement context of the City's programs, the existing budget and the amount needed to develop effective stormwater and sewer programs, and the potential mechanisms for the City to equitably and adequately fund stormwater and sewer management.

We offer these two key findings:

1. **After thorough review, we have concluded that the City does need to make significant investments in stormwater and sewer management to mitigate the chronic flooding and water quality problems that have plagued the City for decades and resulted in state and federal enforcement actions against the City.** To address these problems and better adapt to climate change, the City will need to generate new revenues to support these investments.

2. **We recommend that the City develop two separate user fees for stormwater and sewer management to provide dedicated funding to address the worsening challenges seen in all neighborhoods across the City.** Understanding the additional burden that fees will place on ratepayers to the new stormwater and sewer utilities, this recommendation is not made lightly. However, these new fees are the City's best viable option to move beyond the status quo and address the inequitable distribution of the burdens and costs of an underfunded and inadequate system. Listed below we provide critical considerations to be integrated into a program to best meet community needs.

The Task Force members appreciated the opportunity to collaborate with each other and the Administration in developing recommendations for the City's approach to address the challenges. We request that the Administration continues to engage us in a collaborative and inclusive process as the details of the City's proposal and eventual program implementation are developed. We also recommend expanding the community engagement, education and outreach to ensure the resulting stormwater and sewer programs will be sustainable and address the priorities of our residents and businesses equitably and effectively. Enhanced community engagement will also help optimize the implemented solutions as individuals and businesses play an important role in maintaining the health of the City's stormwater management systems.

We understand that Raftelis will be delivering its full report to the City at the end of March. We look forward to partnering with the City to encouraging the adoption of the recommended sustainable and equitable approach to stormwater and sewer management.

Task Force Process

To prepare to make our recommendations to the City, the Task Force received briefings from City staff, technical assistance from the Southeast New England Program Network, and the City's consultant, Raftelis, which conducted the financial and programmatic review of the current and projected stormwater and sewer management programs. The Raftelis analysis includes the ten-year cost projections for a sanitary sewer and stormwater operational and capital program and funding options for stormwater and sewer management in the City of Providence.

Over the course of eight months, the Task Force collectively developed criteria to evaluate the City's needs and the funding models presented by Raftelis. The final recommendations and considerations for implementation were guided by these criteria.

Criteria for Evaluating Stormwater and Sewer Funding Needs and Sources

These criteria were used to evaluate the potential tax and fee funding options for stormwater and sewer management in the City of Providence:

1. The first priority was to determine if Providence needs additional revenue for the City to address stormwater and sanitary sewer management.
2. The Task Force reviewed the legal feasibility of the potential funding mechanisms to ensure the City has or could enact the necessary enabling legislation.
3. In reviewing the options, the Task Force evaluated whether the funding mechanism would:
    - Provide consistent, enduring, and sustainable funding.
    - Be able to address fairness considerations for both businesses and residents.
    - Center equity considerations in fee and program design, including the integration of a customer assistance program for affordability needs.
4. The Task Force reviewed the logistical considerations including the ease of implementation of the funding method (frequency of data updates, billing method clarity and ease of payment) and whether the appropriate data are available to establish the funding method and continue to bill accurately (e.g., clarity regarding impervious areas, water usage, property ownership).
5. Lastly, the Task Force considered the political viability of the funding mechanisms: Do we expect the necessary political bodies and the community to provide support for the new funding mechanism?

Recommendations

After reviewing the consultant's analysis and consideration of our criteria, the Task Force makes the following recommendations.

1. The Task Force concluded with a strong acknowledgement that the City of Providence needs to generate new revenue to make necessary investments in stormwater and sewer management.
    - We learned that all of the major water bodies of Providence face contamination problems, and stormwater is the primary source of pollution in most of those waterways.
    - The existing funding level is not adequate to meet current and future regulatory requirements to comply with the Clean Water Act.
    - Many of us have seen the warnings at Roger Williams Park, Mashapaug Pond and others for cyanobacteria blooms that make the water unsafe for humans and dogs.
    - Increasing precipitation caused by climate change overwhelms the current systems and causes water quality impairments and significant flooding.
    - We have seen the impacts of flooding in neighborhoods across the city 13 times in the last three years, from flooded roadways to mold damage in homes and the loss of revenue small businesses faced when they had to close their doors to recover from major flash flooding events.
    - These challenges can all be addressed with an increased and sustained investment.

2. The Task Force recommends that the City adopt two dedicated user fees for stormwater and sewer management rather than try to cover the costs of the program through property taxes.
    - The costs of the program should be shared by property owners that place a burden on the City's stormwater and sewer conveyance systems whether or not they are exempt from property taxes. Many entities that are exempt from property taxes contribute to the stormwater issues and would also benefit from the programs to address it.
    - Given the City's many obligations, it is not feasible to embed the increased cost of a program within the constraints of the City's annual levy cap for property taxes and guarantee continuous funding at the necessary projected levels year over year.

3. In the development of the program, the City should address the important considerations about program design implementation outlined below.

Considerations

The Task Force recommends that the City of Providence integrate the below considerations in funding and operationalizing a sustainable and equitable approach to stormwater and sewer management.

Alignment with comprehensive plan policies and zoning ordinances: The City is encouraging housing density which can lead to more impervious cover. On-street parking bans and minimums have previously resulted in over-paving. To the extent possible, related policies must be aligned to meet the City's objectives.

Oversight, transparency, and governance: Rate development and program priorities should have transparent and accountable oversight. Incorporating accountability and independence in oversight fosters credibility that the revenue will remain restricted to funding the City's stormwater and sewer needs and will be invested cost-effectively. Specific considerations include:

- Enable individual ratepayers to access a rate calculator with information detailing the basis for and computation of their stormwater and sewer fees.
- In a partnership with an existing regional utility, PUC approval and review of rate structures could build public confidence in the validity of the rate structure.
- Consider the model of the Energy Efficiency and Resource Management Council which has an appointed oversight board that reviews utility three-year plans and makes recommendations to the PUC. This could be incorporated into existing bodies such as the Sustainability Commission.

Equity and fairness in fee development and implementation. The City should clearly articulate the program's goals for "fairness" and "equity." Considerations include:

- Factor in the upfront capital expenses necessary for residents and businesses installing stormwater management techniques to be eligible for credits.
- Embedding equity in fee implementation could include providing customer assistance with reduced bills for overburdened residents, as well as investments and grant funding in environmental justice and underserved neighborhoods in the City.
- Address the need for equitable capital investment City-wide while meeting the City's water quality improvement obligations.
- Consider using existing low-income funding verifications for ratepayers to qualify for bill assistance (e.g., Rhode Island Energy relies on to offer discounted electricity rates).
- Balance fairness considerations for both businesses and residential property owners, considering the cost of doing business in the City and small businesses that require assistance. While ensuring that residents with small homes are charged less than larger residential properties given their contributions to over-pavement.

- Invest in developing high quality data so that fees are developed accurately, build confidence in the new system, and reduce the burden of property owners to contest their fees.

Enforcement: Legal authority and operational capacity to enforce collection of fees are critical to the program's success. An effective mechanism to enforce payments of a new fee is critical to ensure that the program is fair to the new stormwater and sewer utility ratepayers. The current enabling state statute for sanitary sewer fees allows for real property liens in the case of non-payment, but the current stormwater fee enabling legislation does not. This should be addressed at the General Assembly. Additionally, we recommend the City consider engaging with an existing utility (Providence Water or Narragansett Bay Commission) to ease implementation and benefit from partnering with a pre-existing effective collection system. Such a partnership would require a state law change and may trigger oversight by the Public Utilities Commission (PUC).

Support incentives: The City should create systems to drive behavior changes and support compliance that reduces impervious surfaces and polluted stormwater runoff, such as fee credit programs, and grants to remove pavement or implement green infrastructure on private property. This would make enforcement more manageable and effective for the City while offering businesses and property owners options to reduce the costs for addressing stormwater management onsite.

Demonstration projects and workforce development opportunities: Even before the fee is implemented, use demonstration projects to build trust that investments from the fee will be effective in solving problems and the money collected will be well spent. Public acceptance can also be increased with clear pathways for job training and apprenticeship opportunities with the Building Trades especially for green infrastructure construction and maintenance which will be needed to meet the needs of the City's storm water and sewer management programs. The City should consider partnering with the existing green infrastructure job training and apprenticeship programs run by the Building Trades and local community organizations.

Build public acceptance through robust communications: Funding for education and outreach about the need for increased and consistent stormwater and sewer funding should be reflected in the City's fiscal budgets. Implementing fees would introduce residents and property owners to new concepts about stormwater and sewer management. The City will need to explain that the existing sewer bill from the Narragansett Bay Commission does not cover the costs of the City's sewer collection and conveyance infrastructure. Work closely with partner organizations to ensure clear consistent communication across NBC and Providence Water in explaining the new fees. The City will also need to explain how properties are responsible for stormwater runoff and the need for related investments.

In our task force discussions, the suggestion to create one fee to cover all of the necessary stormwater and sewer infrastructure upgrades and maintenance was offered. However, state legislation requires that the fees be directed only to the specific use that they are designated for. We envision that the two fees would be calculated separately but billed concurrently to property owners in the same envelope. This nuance will be important to communicate clearly to the new stormwater and sewer utility ratepayers to understand why there are two separate calculations.

Implementation timeline: Build in adequate time to create legal and political feasibility, engage the public for outreach and education, and structure the sewer and stormwater fee implementation's design.

Sustainable Stormwater and Sewer Assessment Study Task Force Meeting Dates and Topics

May 2024: Definition of stormwater and distinctions between types of city-owned stormwater and sewer infrastructure and Narragansett Bay Commission infrastructure. Overview of challenges related to stormwater and sewer management in Providence including aging and inadequate infrastructure and more frequent and intense storms.

Early June 2024: Clean Water Act requirements, Rhode Island regulations, and Providence consent orders regarding stormwater and sewer management.

Late June 2024: Preliminary assessment of current costs and gaps for Providence sewer and stormwater programs. Overview of common funding and financing options for stormwater and sewer management programs.

July-August 2024: Task Force community outreach and engagement independent meetings to gain community insights about stormwater and sewer management in Providence.

September 2024: Funding and financing options for sewer and stormwater management, a case study of an innovative and equitable sewer and stormwater financing mechanism, and shared insights from community outreach and engagement.

October 2024: Deeper understanding of funding options for sewer and stormwater management. Review of consultant Raftelis' analysis of the feasibility, sustainability, and equity of the various funding options for the City of Providence.

November 2024: Development of criteria to evaluate options and develop recommendations to the City of Providence.

December 2024: Review consultant Raftelis' 10-year cost projections and funding options, application of criteria to evaluate potential funding options, and development of recommendations for sustainable and equitable funding for stormwater and sewer management in the City of Providence.

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